The Builder.

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English Gothic Architecture.—II.

CONTINUING from last issue our review of Mr. Bond's important work on this subject, we may just note that his Part II., entitled "An Analysis of the Mediæval Church Architecture of England," commences with a chapter on early Christian basilicas and their influence on English mediæval plan, with some very useful sheets of comparative plans to one scale, and the subject of planning generally is considered in the succeeding five chapters, ending (Chapter XIII.) with an analysis of the various forms of plan adopted in parish churches, of which, as the author says, the most common is the three-aisled nave with a long chancel and a western tower. It is the simplest and most symmetrical form of plan—a little too symmetrical and straightforward perhaps, at any rate it is obviously felt to be so now, as in most modern churches of the aisled nave and long chancel type the architect prefers to place his tower at the side or at the angle of the plan. Mr. Bond suggests that but for the collapse of church architecture at the Reformation, the further step would probably have been taken of removing the aisles, reducing the church to the type of the University chapel. This would have been no doubt a practical step towards bringing the church into the condition of an auditorium; but then it was only the influence of the Reformation which led to this new ideal of a church service (if indeed the Reformation went so far as that), and our impression is that the three-aisled nave would certainly have continued had there been no Reformation. Both architectural effect and historic association were on its side.

But we must quit these larger questions, as our intention was in this article to go a little into a consideration of the details of English Gothic, to which a very large proportion of Mr. Bond's book is devoted. And whatever differences of opinion there may be as to the respective merits of French and English Gothic considered in its broader aspects, there can hardly, we think, be any question that in detail English Gothic is in the main superior to any other. The exception would perhaps be in regard to decorative figure sculpture, of which there is a much larger amount remaining in France; and indeed so much of our English Mediæval sculpture was probably destroyed at the Reformation that the comparison can hardly be fairly made. Even in this class of work, however, we have occasional examples in England, such as the angels inside the Chapter House door at Westminster, which are equal to anything to be found elsewhere (the Resurrection Series at Wells we do not count, because we are convinced that it was the work of foreign artists). But apart from figure sculpture, English Gothic can hold its own against any other phase of the style. In the important chapter of mouldings this is emphatically the case. As before mentioned, Mr. Bond gives a liberal illustration of sections of mouldings; twenty-eight sheets, grouped under the headings of piers, arches, strings, bases, etc.; each sheet showing all its examples drawn to the same scale. There is a variety, a beauty, and a force of effect in English Gothic mouldings which cannot be found among those of French Gothic. Not only is their surface effect so good, but even their sections show a beauty and refinement of line which seems to have been studied for its own sake in the drawing; and, allowing for the difference of possible refinement between mouldings in marble and stone, those of English Gothic come nearest to the refinement of section of Greek mouldings, and when considered in respect of fitness for climate and the material in which they were executed, may be put on a level with Greek work, as exhibiting an equal perfection for their purpose.

In the matter of compound piers, as the author points out, we must acknowledge a foreign origin. As he puts it, when the Normans began to build their great churches in England, the compound pier had already a long pedigree. In regard to this question of the compound pier we do not quite agree with the author as to the slight importance he attaches to the system of bringing the vaulting-shaft down to the floor. He seems rather inclined to think that the architects were in the right who cut off the shaft on a corbel above the springing of the nave arcade, his reasons being that the shaft disturbs the continuity of the pier capitals;

that it does not really support the vault (which would apply equally, however, to the shaft stopped on a corbel), and that it practically narrows the space on the floor. "So much was this felt at Lincoln, that when the present stalls were placed in St. Hugh's choir, his vaulting-shafts were chopped off from the piers." All these are points for consideration, no doubt; but after all that can be said, the fact remains that there is an architectural completeness of design in bringing the vaulting-shaft down to the floor, which to our thinking compensates for any practical or logical objection that can be urged against it. And in regard to the fact of its cutting through the ground-arcade capitals, is that not rather an advantage in composition than otherwise? The main tendency in Gothic is to verticality of line, and the breaking through of the vaulting-shaft just prevents the capitals from presenting too marked a horizontal division when seen in perspective succession. We quite agree with the author, however, in preferring the corbelled vaulting-shaft to the system more often found in France, and occasionally in our Norman churches, of starting the vaulting-shaft from off the edge of the capital of the main arcade, with a little base to itself standing on the edge of the capital. It is a system at variance with the true spirit of Gothic architecture, and always has rather a make-shift appearance.

The adherence of the French to the square abacus capital, long after it had been abandoned (save in some exceptional instances) in England, and the prevalence in France down to a comparatively late date of the square abacus form and of a design of capital directly and obviously derived from the Roman Corinthian capital, is one of the most important notes of distinction between French and English detail. We all recognise the great beauty of many of these French capitals of quasi-Classic form; but there is more of originality in the carved Early English and early Decorated capital with its conventional round-lobed foliage growing out of the bell of the capital, than which no finer form of carved architectural ornament has ever been evolved; and it is far more exactly suited to stone treatment than the French form, and more in accordance with the general feeling of Gothic architecture. In regard to the important distinction between this and the naturalistic foliage of a later period in England Mr. Bond is perfectly sound. The naturalistic capitals of Southwell Chapter-House, beautiful in a sense and evidently done with enthusiasm by the carver, have the fault of having entirely lost or masked the idea of architectural support below the abacus; they are as if tied round the bell as applied decoration, instead of forming an efflorescence from it; and moreover, they invite a direct comparison with nature which must be to the disadvantage of the work. As the author truly remarks, "in all this work, workmanship had gone ahead of design. Design indeed there was none. What credit there was belonged to the mason; and to nature, who fashioned the leaf, the fruit, and the bloom."

The chapter on the development of window tracery from what has been called "plate" tracery follows in the main the usual lines on which we have been in the habit of regarding the development of this characteristic of Gothic work, but the author suggests that the origin of plate tracery may be earlier than has been usually assumed; that even in the Anglo-Saxon towers of Northumberland it was not uncommon to pierce the spandrel of the baluster windows with a quatrefoil or some such aperture; he cites Billingham as an example, but gives no illustration; the earliest example figured is that of St. Maurice at York, with its two round-headed lights under one label, and a small circular opening in the spandrel. Two of the bays of Peterborough triforium, side by side, form a curious instance of that experimental character which is found in other details also at Peterborough; one spandrel pierced with a small round opening, the other with four smaller ones arranged as if on the arms of a cross. A suggestion as to the final abandonment of groups of lancets, so graceful in themselves, is that the desire for harmony in bay design may have been one prompting cause: "with one bay and two windows, as in Salisbury aisles, or three as in Salisbury clearstory, there was a lack of harmony. What was wanted was one bay, one window." There may be something in this, which as far as we remember is a new suggestion:

> "Here and there, too, the builders may have been feeling their way to the realisation of the ideal of the Gothic building, as one whose vault could be made to stand without the support of walls: an ideal realised early in such chapter-houses as those of Westminster and Salisbury. In such a building it was unnecessary to confine the glass within the jambs of narrow lancet windows; the whole space from buttress to buttress could, if desired, be glazed. But if glazed, the glass must have mullions and bars of stone to support it; in other words there must be tracery. From one cause or other the traceried window was inevitable."

In the case of geometrical tracery Mr. Bond makes a division of it into two types—those with centre-pieces and those without. The former, we may observe, are both the more numerous and the best in effect; geometrical tracery naturally lending itself to the centre-piece treatment. We are not sure that we agree with the author as to the superiority of curvilinear tracery, though we agree that this and its cousin the French Flamboyant have come in for a good deal of uncalled-for reprobation. The advantage in point of design in geometric tracery is that tracery-bars and spaces alike form symmetrical design; in curvilinear tracery the true design is only in the bars, the spaces are what their design will leave. It is true that geometrical tracery gives many meeting-points awkward to deal with; but this is counterbalanced by the fact that curvilinear tracery cannot in most cases be made to fit naturally into the space enclosed by the window arch, but the design seems to be cut off by it, while geometrical tracery can readily be designed so as to fill symmetrically the space of the arch. On the whole it may be said that geometrical tracery is the more architectonic form. We do not observe that the author anywhere notices what is one of the great architectural advantages of tracery, viz.: that it carries the masonry design over the windows, instead of leaving them, as seen externally, mere openings. We are glad to find that he has a good word to say for the Perpendicular window, which unquestionably is the finest of all for the exhibition of stained glass, but which also has, in its masonic design as seen externally, a quality of architectural repose combined with richness which is worth a great deal. There may be less poetry about it than we find in the earlier traceried windows, but it has an architectural fitness that cannot be denied.

Doors, to which of course a chapter is devoted, have always been a weak point of English churches and cathedrals, not because they are not beautifully and richly treated, but because they are on so small a scale; except at Peterborough, with its great portico unique in England, there is no attempt to give appearance of scale and pomp to the entrance, as in the French cathedrals, by providing a great arched framework with sculpture in the tympanum, and limiting the actual door-head to the level of the springing. In England, as Mr. Bond's illustrative examples show, the arch is generally the actual doorway, and is but of small dimensions. This may be said to give scale to the building, but in the bolder French method the size of the actual door gives the scale of the human figure, and the deep and richly sculptured and recessed arch over it gives a dignity which English church and cathedral doorways for the most part sadly want.

On the question of towers, Mr. Bond refers on an earlier page, in his chapter on "Transepts," to the question whether the central tower preceded the transept, *i.e.*, was the transept only a structural necessity for abutment to the tower? It is often regarded in this sense, and we are inclined to think rightly. Mr. Bond is against it, and asserts that transepts existed long before there were central towers; but the transepts of the double-aisled basilicas of Rome in the IVth century, to which he refers, can hardly be called transepts in the mediæval sense. The author makes a further suggestion on this point; viz.: that where the four roofs met, nearly always not all of the same height, there was a difficulty in arranging their junction, and that a simple way would be to carry the four walls up, above each of the crossing arches, sufficiently high to abut the roof against them; that this was the origin of central towers, and hence the low elevation of the earliest towers. There may be something in that, but the low elevation might be sufficiently explained by the unwillingness to load the crossing piers and arches more than could be helped. Our feeling is that the mediæval transepts and central tower developed *pari passu*, and were as much the result of a desire for an effective architectural centre as anything else. In the chapter on "Towers" there are some interesting remarks on the possible original intention of the tower where the transepts formed a *crux commissa*; *i.e.*, were close up to the apse, in very early churches. The author thinks there is no doubt about it; Gregory of Tours speaks of the

central tower as *domus aræ*, the tower over the altar, and that the lantern in the upper part of the tower was to pour down a flood of light on the altar. Mr. Bond mentions an existing interior, St. Eusèbe, Auxerre, where a similar arrangement has, he says, come about "fortuitously," and where "the contrast between the brilliant late Gothic choir with clearstory soaring out of sight and the low and dark nave is strikingly effective"; but from the reference to "the choir" this can hardly be an example of the *crux commissa*, which presupposes only an apse east of the crossing. On the whole, we prefer the architectural to the ritual origin of the centre tower; and as to the roofing difficulty, if the transept roof were the same height as the nave (as it generally would be), there would be no particular difficulty in stopping the lower choir roof against the east side of it. The interposition of the tower is certainly a practical convenience in this respect, but we hardly think that so important and costly a feature as even a low tower would be introduced merely for that reason. Mr. Bond admits indeed, ultimately, that the central tower was "of supreme artistic value," but that a heavy price had to be paid for it:—

"In most cases, however, the central tower was erected; by the cautious only so high as to provide a ring of windows, as at Beverley Minster, Westminster, Winchester, and Bristol; by the bolder so as to be of imposing height and bulk, as at St. Albans, St. David's, New Shoreham, and Tewkesbury; by the venturesome crowned with a wooden spire, as originally at Ripon, Hereford, and Lincoln; by the rash surmounted by a spire of stone, as at Norwich, Chichester, and Salisbury."

A list is given of some that have collapsed, as indeed Salisbury unquestionably ought to have done; the putting of that lofty spire above those small piers was one of the rashest and most risky things ever done. But the subject ought not to have been mentioned without a mention of the manner in which all such danger was avoided at Tewkesbury, by the monumental seating of the tower on masses of solid wall extending east and west between the crossing and the nave and choir arcades; a remarkable piece of business-like construction; no driving in of the arcades there, at all events. The critical remarks on the subject of towers are very good; on the necessity for depth of window opening, and how much the character of the tower depends on the treatment of the angles. "If it is to overawe, the tower may rise in sheer verticality from pavement to cornice, like the campanile in the piazza [or that was in the piazza] of St. Mark's . . . . But the cornices are the weak points of towers. We [in England] did not like to lose the help of buttresses." It depends on the character that is wanted. Mr. Bond distinguishes between four types of towers: (1) without ornament; (2) with equally diffused ornament; (3) ornament concentrated in the ground story and belfry story; and (4) ornament concentrated at the summit. Of these we may remark that 2 and 4 are the best types. The Victoria Tower is a splendid example of the second; among church towers Mr. Bond selects Wrexham, of which a separate plate is given, nor could there be a finer example of its class. But to our thinking nothing, on a large scale especially, equals in effect the 4th type, plain substructure with ornament concentrated at the top. Perhaps the generally rich treatment, with a line slightly set back as it ascends, best suits the repose proper to a church or cathedral. But it is in the 4th type that the full grandeur of a tower erection is realised.

While thinking of this question of the transeptal plan and the central tower, it may be suggested whether there is not something new to be done, architecturally, with this type of church, in a plan and design framed on the general lines of a mediæval building, but with a new treatment in detail. A transept church has been so almost universally treated in modern times as a mediæval church, that it hardly seems to have occurred to any one that the same general architectural scheme might be susceptible of a perfectly new and different treatment in detail. The experiment would be worth trying.

THE APPLICATION AND INCIDENCE OF THE LONDON BUILDING ACTS (AMENDMENT) ACT, 1905.

By Bernard Dicksee, F.R.I.B.A.

THE articles published in this journal upon the subject of this Act have dealt with its various requirements; it is now proposed to consider the application and incidence of those requirements.

For our present purpose the requirements may be classed under two heads:—A, cases in which power is given to the Council to require "such means of escape in case of fire as can reasonably be required under the circumstances of the case"; B, cases where definite provisions have been set out in the Act.

Class A will include sect. 7: Provisions for new buildings being either "high buildings" or "twenty persons buildings"; sect. 9: Provisions for existing buildings being either "high buildings" or "twenty persons buildings"; and sect. 11: Provisions for living rooms over premises used for storage of inflammable liquid.

Class B will include sect. 10: Rules for projecting shops, and sect. 12: Rules for access to roofs.

The administration of this Act differs in many respects from that of the London Building Act, 1894, on the one hand, and the Factory and Workshop Act, 1901, on the other; it also differs in the case of the various provisions of the Act itself; it will therefore be convenient to consider the administration of each provision under the classification indicated above.

Class A, sect. 7: Before commencing any "new building," being either a "high building" or a "twenty persons building," the "owner" is required to deposit with the Council such particulars as will have to be subsequently included in the building notice to the District Surveyor, together with a copy of the "plans" of the building, showing, so far as may be necessary for the purposes of the Act, the means of escape proposed to be provided. The Council may within one month (extended to two months in the summer vacation) approve, refuse to approve, or approve subject to conditions, stating fully all their reasons for any refusal or conditions; but if they fail, within the time, to notify their refusal or their conditions, such failure is to be deemed an approval. If dissatisfied with the requirements of the Council, the "owner" may within two months appeal to the Tribunal of Appeal (sect. 22). It is noteworthy that no such appeal is provided under the Factory Act in the case of new buildings, nor was any appeal provided for against requirements of the Council under sect. 63 of the London Building Act, 1894, in respect of buildings exceeding 60 ft. in height.

No building within the provisions of this sect. 7 may be occupied until a certificate of the Council has been granted that the building has been provided with the means of escape required, but such certificate must be issued within fourteen days of notice to the Council of the completion of the building, and an appeal lies to the Tribunal against the refusal to grant such certificate. Any alteration of, or addition to, a certified building (including a change of user or circumstances) that would materially increase the "risk of fire" can only be made with the assent of the Council or, on appeal, of the Tribunal.

Sect. 9: The procedure in the case of "existing buildings" is somewhat different; the Council are by sect. 17 first to request in writing the District Surveyor to ascertain and notify to them such buildings within his district, or any part thereof, as in his opinion comes within the provisions of this section dealing with "existing buildings" being either "high buildings" or "twenty persons buildings." From and after January 1, 1907, the Council may, if in their opinion the building be not sufficiently provided with means of escape in case of fire, serve on the "owner" a notice requiring him to provide such means of escape as can reasonably be required under the circumstances of the case. The "owners" may, however, within twenty-one days submit alternative proposals for the sanction of the Council; and the whole matter is subject to an appeal to the Tribunal; but when a final decision has been arrived at, the "owner" must execute the necessary works, and, should he fail to do so, he will be liable to penalties, and a Petty Sessional Court may make an order prohibiting the occupation of the building or part of a building affected.

Sect. 11 prohibits the use as a living room, workshop or workroom of any room over or directly connected with any part of a building in which certain inflammable liquids are kept for sale or trade, in such quantities or in such manner as to be liable to cause fire or explosion, without the provision of safeguards and means of escape to the satisfaction of the Council; subject by sect. 22 to an appeal to the Tribunal. In this case there is no provision for a preliminary survey by the District Surveyor, or for the service of any notice as to the requirements of the Council, though, of course, no conviction could be obtained against any person until some notification of the requirements of the Council had been given to him. It is also noteworthy that in this section the

obligation is not placed upon the "owner," but the person who uses or permits to be used the room contrary to the section is liable to penalties.

In all cases under Class A the Council are required by sect. 16 (2) to furnish particulars of their requirements to the District Surveyor, whose duty it is to supervise the work and to ascertain that the means of escape are properly provided, and to report to the Council any failure to provide the same.

It is evident that in all cases under Class A it is intended that the Council shall make their requirements and serve notice of them upon the "owner" or other person upon whom the obligation falls, and that the District Surveyor shall supervise the execution of all consequent works; but it is not so clear who it is intended shall take proceedings for the recovery of penalties for any neglect to comply with the requirements of the Council when made. The duty of taking such proceedings is not imposed upon any authority in particular, and may therefore be exercised by either, though in all probability it will be exercised by the Council.

Class B: The rules for projecting shops and for access to roofs, being similarly administered, may be considered together, but the application of those rules compulsorily to an existing building necessarily differs from their application in the case of a new building or work voluntarily undertaken by the owner.

When the Act left the House of Commons it contained a definite provision for the service of a notice to be enforced in like manner as a notice of irregularity under the Act of 1894; but in the House of Lords that provision was struck out, leaving the procedure much less clear.

In an existing building, therefore, as there is no provision for the service of a notice requiring the compulsory alteration of the building to make it comply with the provisions of sects. 10 and 12, proceedings will be by a summons against the "owner" under sect. 24 (1), for the recovery of continuing penalties; such proceedings may be taken at any time subsequently to January 1, 1906, the commencement of the Act, and without any previous notice to the "owner"; the mere existence of the building in its original condition is an offence under the Act. The law is undoubtedly harsh in this respect, but in practice, no doubt, the District Surveyor will, as a matter of courtesy, notify the owner before any proceedings are taken. The duty of taking these proceedings has not been specifically imposed by the Act upon the Council or upon the District Surveyor, such proceedings may therefore be taken by either authority, or indeed by anyone; but as the approval of the District Surveyor is a factor to be dealt with, it is difficult to see how any proceedings can be taken without him. The District Surveyor is required by sect. 16 (3) to report to the Council any building that he finds not to be in conformity with either of the sections, but beyond provision for the payment by the Council to the District Surveyor of a fee for the work of ascertaining what buildings come within the sections, the Act gives no directions. The most convenient course will probably be a joint action by the Council and the District Surveyor, the former taking proceedings and the latter making the necessary surveys and giving evidence in like manner to the Dangerous Structure procedure, which has been found to work well. The Council have power to dispense with all or any of the provisions of the sections, and an appeal from their decision lies to the Tribunal.

When, however, the work has been commenced (either as the result of any proceedings against the "owner" or on the initiative of the "owner" in erecting a new building or altering an existing building) the execution of such work is, by sect. 16 (1), subject to the supervision of the District Surveyor in like manner as any work done to, in, or upon the building under the provisions of the Act of 1894. If, therefore, during execution of the work any irregularity, whether of omission or commission, be committed, procedure will be by service by the District Surveyor on the builder of notice of irregularity as under the Act of 1894; followed, when the notice has not been complied with, by a summons for a magistrate's order requiring the builder to comply with the notice. Should the builder fail to comply with the magistrate's order he will be liable to the penalties provided in the Act of 1894 for such neglect; but such penalties are distinct from those imposed by the new Act upon the "owner" for failure to comply with the provisions of the sections.

It is worthy of note that every offence against the Act is a continuous offence, and that the liability to the penalties continues for every day on which the offence continues; consequently proceedings may be taken at any time within six months of any day on which the building continues to be not in accordance with the Act (M. B. W. *v.* Anthony, 49 J.P. 229).

The responsibility of complying with the requirements of the Act falls in the first instance upon the "owner" as defined in sect. 6, being the person entitled to receive the "rack rent"—*i.e.*, a rent being not less than two-thirds of the full annual value, based on the assumption that the tenant pays rates and taxes, and that the landlord bears the cost of repairs and insurance; the annual value will, therefore, be the gross assessment value, whereas under the Factory Act the annual value is equivalent to the rateable value.

Having complied with the Act and paid the expenses of executing the necessary work, such "owner" may, by sect. 20, apply to the County Court, and the Court may issue a summons "requiring the several persons entitled to any estate or interest in the building" to appear and may make an order apportioning the expenses among the various parties interested, as may be just and equitable in the circumstances of the case. This provision is the same as that contained in the Factory Act with the addition that regard is to be had to the terms of any lease or contract affecting the building. This difference is more apparent than real, as in the case of Monk *v.* Arnold (1902) 1 K.B. 761), decided under the Factory Act, it was held that the County Court is bound to take into consideration the contract between the parties, but, unless there is something in the terms of the lease to make it unjust and inequitable that he should apportion the amount between the parties, he has jurisdiction to do so; it would therefore appear that the additional words in the Act we are considering merely give effect to that judgment.

There is, on the other hand, a provision (sect. 21) that where the occupier claims to have sustained any damage directly and solely caused by any works under the Act, such claim is to be referred to arbitration; so that we may have two sets of claims arising out of the same work, the claim of the "owner" against the occupier for contribution, referred to the County Court, and the claim of the occupier against the "owner" for damage referred to arbitration. This double reference does not seem likely to work satisfactorily in practice; it certainly would have facilitated the working of the Act had the same tribunal been appointed in respect of both claims.

The actual cost of the work of altering existing buildings is by no means the full extent of the burden upon those affected; the inconvenience and disorganisation of trade will be of much moment; and, in the case of projecting shops, the loss of light will not be the least important factor; but careful forethought will doubtless mitigate the hardship. Means have in some cases already been devised of constructing a self-supporting flat of concrete and steel over the existing flat, so obviating the nuisance caused by drippings from wet concrete, and allowing the trade to proceed undisturbed during the work. The difficulty of light may in some cases be met by constructing the fire-resisting roof or flat at two levels, a flat 6 ft. wide at a higher level, close up to the main front wall, affording the opportunity of a vertical light between the front edge of that flat and the rear edge of that on the lower level.

PAYMENT OF DISTRICT SURVEYORS.

THE letter which we print in another column, addressed by the President of the District Surveyors' Association to the Chairman and members of the London County Council, raises important questions with regard to the recommendations of the Building Act Committee, whose Report on the question of payment of District Surveyors by salaries was published in our issue of December 16 last. Unlike other municipalities, London has hitherto been fortunate in securing for the work of supervision of buildings under the Building Acts the services of independent men who for the most part have received a liberal professional education; the majority of the District Surveyors have been practising architects (only restricted from working for private clients within the areas of their respective districts), and not a few have been men of high position in the profession, such as—to mention only those deceased—Edward

I'Anson, Thomas L. Donaldson, John Whichcord, George Godwin, Robert Kerr, Banister Fletcher, T. Roger Smith, and Charles Fowler.

It may be said that the public who build do not want Past Presidents of the Institute and Royal Gold Medallists for this work of supervision; but the fact nevertheless remains that the building public have obtained, at an expenditure of about 50,000*l.* per annum, the services of fifty-seven highly-trained professional men, and the same public, under the new scheme now suggested, will continue to pay 50,000*l.* per annum—but into the coffers of the London County Council. The difficulty that the members of the Council, whatever their qualifications may be, are, neither by training nor experience, qualified to earn professional fees is to be met by sub-letting the job, and the work which at present is divided among fifty-seven Surveyors is now to be done by thirty-three officers, who are to receive by way of salary not 50,000*l.* per annum, but 28,000*l.* per annum. The difference in the gross total is to be expended in establishment charges, wages to an army of assistants, and, if it should fall out that the forecasts of the Building Act Committee prove correct, "there would be a balance in the favour of the Council" of about 2,000*l.* per annum.

That is all very well, but the balance in favour of both the building public and the rate-paying public is farther to seek. The following questions would seem to require an answer:—Will the public be willing to pay to the Council the same professional fees they have hitherto paid for this service? Will the Council, paying the men who do the work little more than one-half of the fees those men earn, be able to ensure that efficient and high-class service which the public has a right to expect? What guarantee have the ratepayers that this work, which it has hitherto taken fifty-seven men to do, can be continued without a break-down by thirty-three men? The London County Council are accustomed neither to overwork nor to under-pay their staff, therefore, if it be found necessary to increase the number thirty-three by the appointment of five or six additional men, how far will the "estimated profit" of 2,000*l.* a year go to prevent this service, like some other services of the London County Council, becoming a charge upon the rates? Is there not rather a strong probability that the ratepayer will find himself called upon to share with the building-owner a burden which hitherto the building-owner alone has had to bear? Unless a satisfactory reply to these questions is forthcoming, we think that, with a County Council Election impending next year, the present Councillors will be wise to leave well alone.

BUILDING IN LEEDS.—A return of the building operations in Leeds for the nine months ending December 30, which was presented at a meeting of the Building Plans Committee of the Corporation on the 29th ult., shows that, in spite of the outcry that Leeds is overbuilt, the builder, speculative and otherwise, has been fairly active. During the period there were completed 20 villas, 70 semi-detached residences, 626 through houses, 600 back-to-back houses, and 4,265 miscellaneous buildings; while there are in hand at the close of the year 17 villas, 49 semi-detached residences, 537 through houses, 322 back-to-back houses, and 1,575 miscellaneous buildings.—*Leeds Mercury.*

NOTES.

Building By-laws in Rural Districts.

THE recent discussion of the subject of Building By-laws in Rural Districts and the supposed difficulties which they put in the way of cottage building (difficulties which, as before said, we believe to be much exaggerated) has had the effect of inducing the Local Government Board to address a circular to the Rural District Councils on the subject. The gist of this circular is that the series of Urban Model By-laws were not necessary nor intended for a district or part of a district of quite rural character; and the Board think it probable that amongst the rural districts in which the Urban Model By-laws are in force there are many parishes or other districts which cannot be said to have "urban" characteristics, "and in which the by-laws in some respects impose undue restrictions on building and are more onerous than the circumstances require." The following quotation indicates the action which the Board wish the Rural District Councils to take in respect of this subject:—

"The Board would be glad if the Rural District Council would carefully review the circumstances of their district for the purpose of seeing whether any modification of the present by-laws is desirable, and whether any part of the district might more suitably be placed under a series based on the Rural Model, or, if this is not thought suitable, by such a series supplemented by a limited selection of clauses from the Urban Model. In some cases relaxation has already been given by a clause exempting detached dwelling-houses from certain of the restrictions as to the construction of walls. Even where it is considered that the full code of by-laws should be retained, the existing by-laws, unless made very recently, might with advantage be reviewed in connexion with the latest form of the Urban Model. This contains many additions and modifications based on the experience of the working of the old model, and at the same time is framed so as to give more elasticity in the administration of the by-laws.

The Board wish to be informed of the result of the consideration of this letter by the Rural District Council."

It seems to have been inevitable that the Local Government Board should have taken some action in consequence of the public outcry that has been raised, and perhaps the tentative course indicated in the above paragraph is the best they could have taken under the circumstances. They have, however, set the Rural District Councils a sufficiently difficult task in asking them to endeavour to define the limits at which "urban" character merges into "rural" character; limits not only difficult of determination at the moment, but liable, in some parts of the country at all events, to frequent alteration. However, the suggestion is a very well-intentioned one, and perhaps some practical enlightenment on the subject may result from it; but we should think that, in order to give any practical reply, the Rural Councils would be under the necessity of formulating some definite standard of circumstances which may be held to distinguish a "rural" district from an "urban" one.

The Charing Cross Inquest.

BY the evidence given by Sir Benjamin Baker and Sir John Wolfe Barry, at the adjourned coroner's inquest, held on Monday last, it is made quite clear that the cause of the recent disaster at Charing Cross was simply the failure of the main tie-rod in the first roof truss from the southern end of the station. The facts recorded in our recent article as to the condition of this rod are amply confirmed by the statements of these experts. It is now evident that the bar had an original defect at the centre of a weld, although, so far as could be judged after the accident, the metal had originally been continuous at the outer surface. The examination made by Sir John Wolfe Barry showed that the flaw in the tie-rod extended over two-thirds the area of the rod, and was in itself an ample reason for the failure. In his opinion nothing but a laboratory experiment could have revealed the presence of the flaw, and it is very satisfactory to find in this evidence proof of the fact that the railway company's inspectors are not to be blamed for not having discovered the flaw in the course of their periodical examinations. All the expert witnesses examined were positive on the point that the mishap was in no way due to deterioration of the ironwork generally, and the estimate made by Sir Benjamin Baker was that, in its forty years of existence, the roof had lost only about 6 per cent. of its original strength. This computation may be open to question, but it is no doubt the case that the strength of the ironwork had not been seriously diminished by corrosion. The evidence of Mr. Percy Tempest and his assistant shows that a good deal of attention has been devoted to the cleaning, painting, and repairing of the Charing Cross roof during the last few years, and we are glad to find that in returning the verdict of accidental death the coroner's jury attached no blame of any kind to the officials of the railway company. The most important lesson to be drawn directly from the accident is that a roof like this ought not to depend for safety upon a single tie-rod. Sir Benjamin Baker said that in modern practice there would be two tie-rods "so that if there were an invisible flaw they would have another to fall back upon." This confirms the opinion expressed in our note of December 9 last, but we must point out that as long ago as 1851 Mr. Berkeley designed the Fenchurch-street station roof with duplicate ties, a good example that was not followed by Sir John Hawkshaw, and has not been adopted by many of his successors. No doubt really practical and careful engineers actually employ two tie-rods in roof trusses, but we are sorry to say that the practice is by no means so general as it ought to be, even in the present day.

Demolition of Charing Cross Roof.

AT the present time and during the next week or two our readers will be able to witness at Charing Cross one of the most interesting and extensive processes of demolition that has been conducted in the Metropolis. The contractors are now busily engaged in disconnecting and lowering the roof principals and other parts of the station roof by the aid of timber staging built up from rail level to the first remaining truss at the south end, and a massive travelling gantry, to be equipped with four powerful cranes, is almost completed for dealing with the other principals in succession. An

inclined roadway leading down to the embankment affords convenient means for carting away the old iron work and other materials without causing inconvenience at the north end of the station, or interference with traffic in the Strand. As the public are admitted freely to the space in front of the station platforms, anyone desiring to observe the progress of the work can do so quite conveniently. It is not often that a great engineering operation of the kind is conducted in our midst, and the present opportunity is one that ought not to be lost.

The Sewage Question. ALMOST every aspect of this important subject has been thoroughly threshed out in various treatises, papers, and articles in the technical press, and it is extremely difficult for anyone to write upon it without going over ground that has been repeatedly trodden by others. However, in a paper read by Mr. J. F. Reade at the last meeting of the Civil and Mechanical Engineers' Society, a useful summary of the present position is given. After dealing with the various difficulties that first arose in determining the best means for adoption, and discussing the results ascertained by chemists and bacteriologists as to various systems of purification, the author referred to the controversy that has arisen between advocates of the septic tank and the contact bed systems, and pointed out that neither system alone was able to accomplish all that was originally claimed for it. For instance, the septic tank does not completely liquify the solid constituents of sewage, and sludge disposal has still to be effected. Contact beds, again, are apt to choke and to become useless until they have been renovated. It is a fact that no simple process has yet been discovered which will give an effluent perfectly satisfactory from a bacteriological standpoint, and suitable for discharge at all times into unpolluted streams. Passing on, the author gave an analysis of the various Reports issued by the Royal Commission on Sewage Disposal, which is quite deserving of perusal. At the present time the attitude of public bodies is not particularly marked by any evidence of the desire to make changes in existing methods of treatment, and we agree with the author in the opinion that, until the establishment of the central authority and subsidiary river boards advocated by the Commission in their Report of 1903, it is improbable that local authorities will undertake any schemes involving considerable expenditure except such as are shown to be absolutely necessary.

Concrete Piling. THE Committee on Science and the Arts of the Franklin Institute, having undertaken to inquire into the merits of the Shuman concrete pile, report that after due consideration they recommend the award of the John Scott legacy premium and medal to the inventor. The invention to which we refer comprises two parts—(1) a tool for the formation of holes in the ground to contain concrete; and (2) several devices for filling the hole with concrete and for holding the material in compact position in loose or permeable soil. The tool consists of a hollow shank having a steel point of larger diameter, and shaped somewhat like a shell used in gunnery. The point is riveted to the shank, and is made so as to favour the admission of air below it when being withdrawn. Under this patent the process of forming piles is conducted by driving a preparatory tool or mould into the ground, and then by filling the opening with concrete, which, when hardened, forms the pile. Owing to the use of an enlarged point the tool is very readily withdrawn, and, in some cases, it is said to be advantageous to substitute a solid concrete head for the steel point, and to leave this head at the bottom of the hole. A large number of piles formed in the way described have been used in the United States, and some 2,000 of them were driven not long ago at the Washington Barracks, and tested to the satisfaction of the United States engineers in charge of the works.

The Proposed Transporter Bridge over the Tees. A SCHEME brought forward for the erection of a transporter bridge as part of the project for connecting Middlesbrough and West Hartlepool by means of a light railway does not appear to meet with the approval of the Tees Conservancy Commission. The grounds for the opposition in question are certainly not unreasonable, for, while the clear headway proposed by the promoters of the bridge undertaking is only 120 ft., vessels are built on the Tees with masts rising to the height of 170 ft. above water level. If that were the only difficulty we presume the promoters would agree to increase the height of the bridge rather than face opposition. Another point urged is that the inconvenience to vessels caused by the passage of the car, and the risks to shipping during stormy and foggy weather and on dark nights, would seriously affect navigation and trade. As the undertaking of the Commissioners represents a capital of more than a million pounds, it is quite right that their views should receive consideration, but we fear that they overrate the obstacles likely to be offered by the use of a transporter car. Experience of transporter bridges at other seaports certainly does not lead to the conclusion that any serious injury would be caused to shipping on the Tees, providing the height of the connecting girder were adequate.

Surface Contact Traction. IT is now several years since Sir Alexander Kennedy reported to the London County Council on the various systems of electric traction and recommended the "open conduit" system. At the time, if we remember aright, the only practical "surface contact" systems were the Westinghouse and the "Claret-Vuilleumier," and in our opinion neither of these was as good as the system adopted by the London County Council. At the present time, however, when it is proposed to spend large sums of money in electrifying the Northern system of tramways, it is highly desirable that the merits and demerits of "surface contact" systems should be again considered. For this reason we welcome the clearly written and well-illustrated paper on this subject by Mr. Noble Twelvetrees which appeared recently in the *Engineering Review*, and is now issued as a pamphlet. We agree with him in thinking that an objection to the Lorain system is that a stud may be left alive after the car has passed over it; and although it does not often occur, yet the mere possibility of it will make careful people in Wolverhampton avoid stepping on a stud when crossing the road. Mr. Twelvetrees gives deserved praise to the Kingsland contact systems, the earliest forms of which we described in these columns a good many years ago. We understand that the new electric tramways in Lincoln will be run on the Kingsland system, and the working will be studied with interest by all interested in the future of electric traction. The rapid development of new methods of electric traction naturally makes municipal authorities and financiers chary about expending large sums in installing the track. The "antiquation factor" of this part of the undertaking is undoubtedly serious, and it is therefore desirable that the relative advantages of open conduit and surface contact systems should be carefully considered.

Gwydyr House, Whitehall. AN executive committee is formed to consider the proposal which has been made for the establishment of a national naval museum and to open a fund estimated at 100,000*l*. Inasmuch as Gwydyr House will at no distant date be vacated by a branch of the Board of Education upon the completion of the new Government Offices in Parliament and George streets, it is suggested that the house should be demolished for the erection of a national naval museum, to be supplementary to the adjoining Royal United Service Institution. Gwydyr House, the first home, until 1840, of the Reform Club, was built in 1795-6 upon Crown land by John Marquand, Surveyor to the Woods and Forests, for Sir Peter Burrell, Surveyor-General of Land Revenues, who was advanced Lord Gwydyr in 1796, and had obtained a thirty-one years' lease of part of the old Privy Garden of the Palace at Whitehall. After Lord Gwydyr's death in 1820 the house was inhabited by his widow, Priscilla, in whose favour was terminated the abeyance of the ancient Barony of Willoughby de Eresby, and subsequently by their daughter Elizabeth, Countess of Clare, who rented it in 1842-69 to the Commissioners of Woods and Forests for departmental purposes. Gwydyr House has since been the offices, in turn, of the old Poor Law Board (Local Government Board), of the Charity Commission, and of the staff for administering the City of London Parochial Charities Act. In 1884-5 the Office of Works converted the attics into a top floor; the one-storied wing added in 1898 projects on to the site in the Privy Garden of the dial constructed by Edmund Gunter for Prince Charles, and for which in 1622 Nicholas Stone made the pedestal: see his MS. "account-book" in the Soane Museum.

Church of St. Peter Hungate, Norwich. THE rehabilitation of the beautiful little Church of St. Peter Hungate (the Hundred-way), on Elm Hill, Norwich, is

to be carried out under the directions and superintendence of Mr. Weir. The demolition of the fabric was contemplated some months ago, but the Consistory Court agreed to delay a grant of the faculty in response to the requests of Prince Frederick Dhuleep Singh and the Society for the Protection of Ancient Buildings. The church, cruciform on plan, having a western tower and a porch with parvise, was rebuilt in 1460 by John and Margaret Paston. The nave and transepts are faced with flint; in the nave wall are squints directed towards the side chapels; some of the original glass and window tracery remain, together with the fine hammer-beam roof. The church is cited in the Paston Letters, and Margaret Paston made bequests of money for the services by the priest and to "each household of the parish that will receive alms."

The Carfax Gallery.

AT the Carfax Gallery is a collection of paintings by Members and Associates of the Royal Academy. We do not know how many of them are new or first exhibited; some certainly are not; Sir L. Alma-Tadema's portrait group (7), for instance, we have seen before; but there are some fine examples of some painters at their best. Mr. North's "Brightest Days" (3) is one of these, a sparkling landscape of sunlight and colour, with two foreground figures very effectively put in. Mr. Hacker's "La Cigale" (4), if a new work, represents a change in his practice in colour effect; it is a piece of exceedingly rich and warm colour shown in the treatment of a half-length draped figure. One of the most interesting works is a small but highly finished view of "Bamborough Castle" (6) by Sir E. Poynter, one of the finest of his small landscapes that we have seen. Mr. Solomon exhibits a recumbent "Psyche" (15) which is an admirable piece of drawing, but his life-size head of "St. George" (21) is very weak in conception, and looks more like the head of a woman. Among other things is a clever sketch of a nude figure by Mr. Tuke, "Sun and Sea" (31) (the first time we remember to have seen a female nude study with his name to it); a fine little pastel of an evening landscape and cattle (11) by Mr. H. W. B. Davis; two fine sea pictures (14 and 29) by Mr. Napier Hemy; a bold sketch of two figures of children lighted by firelight (19) by Mr. F. Bramley; a landscape with foreground figures, "Molecatchers" (35), by Mr. Swan, which looks good, but was lighted by artificial light and therefore difficult to estimate as a landscape; and a good Thames scene by Mr. Wyllie, "Towing past the City" (24), with a steamer and barges in the foreground. Sir W. Richmond's curious fantasy called "Phaeton in the Mid-day" (1) is at all events a very successful attempt to represent the actual flash of light from the wheel of the solar chariot.

The Fine Art Society.

AT the Fine Art Society is a collection of water-colours of "Animal and Pastoral Subjects" by Mr. J. C. Dollman. A considerable number of them are studies of different types of horses, all good, that called "Trespassers" (16) being perhaps the best; and better even than these is one of a lion lying on its side (11), which is quite masterly. Kittens also are well represented in more than one frame; and a monkey looking curiously at a penny held in its hands, and entitled "Pourquoi?" (33), is a capital bit of humour in animal painting. The collection includes also some charming little landscape sketches; "Summer" (19), "September" (22), "The Happy Valley" (24), and "Hazy Afternoon" (34).

The New Academicians.

THE Royal Academy have elected Mr. S. J. Solomon, A.R.A., as R.A. As a most accomplished technical executant Mr. Solomon is fully entitled to the honour, though we cannot say that we find his works very inspiring in an artistic sense; but that limitation may apply to some older Academicians. Herr Josef Israels, the great Dutch painter, and Mr. St. Gaudens, the American sculptor, were elected Honorary Foreign Academicians. The first of these two elections will only excite surprise that it comes so late; the second will perhaps serve to attract more notice in this country to the works of Mr. St. Gaudens, which, however, as far as we know them, appear to us to be more remarkable for vivacity of intention than for elevation of style. Mr. Edward Stott and Mr. Pomeroy have been elected Associates—the latter name will be more universally approved than the former, though Mr. Stott has earned the distinction; and Mr. Frank Short and Mr. W. Strang have been elected, according to the daily press reports, "Associate Engravers." If this is to be their title, and not only a journalistic way of putting it, we must say that we cannot see why these two artists, who are original artists in black and white and not mere engravers of other men's work, should not be A.R.A. *sans phrase.*

THE INTERNATIONAL SOCIETY AT THE NEW GALLERY.

THE "International Society of Sculptors, Painters, and Gravers," whose sixth exhibition is open at the New Gallery, have done wisely in placing the sculpture exhibits in the Central Hall in the first pages of their catalogue, for but for the sculpture the exhibition would not be much worth a visit, and moreover it is the sculpture hall alone, in which M. Rodin, M. Bartholomé, and the late Constantin Meunier are represented by important works, which gives it any good right to the title of "International." As far as the pictures are concerned, there is a certain proportion of foreign works, but none of them of any importance. The Society deals largely in promises and in the circulation of anticipatory paragraphs (some of which we have prudently declined to print), but their performances contrast singularly with these documents. We heard not long since that this exhibition was to include a representative collection of modern American painting, for which special arrangements had been made. There are eight pictures from America, only one of which, Mr. Brush's "Mother and Child" (214) is a work of any importance; this, like six more out of the eight, are lent by the Pennsylvania Academy; but this certainly is hardly a representative exhibition of American painting.

M. Rodin's group on heroic scale, "Le Baiser" (1), has been illustrated over and over again, and is one of the best of his recent works; were all his work like this, in passionate suggestiveness and in modelling, there would be more excuse for the attitude of adoration which contemporary critics and society babblers assume in regard to him; it is really an impressive thing, though detail is much slurred over in some portions. At the opposite end of the hall a colossal Adam and Eve by M. Bartholomé (3) is also a very fine group, both in expression and modelling; it is after The Fall, and Eve is consoling Adam, whose face is hidden in his hands; the figure of Eve is of fine and ample modelling, worthy of the mother of mankind. M. Bartholomé also exhibits a graceful figure of a kneeling girl —"Jeune Fille se Coiffant" (2). But this sculptor has never equalled, in poetic feeling and originality, the wonderful group of the man and woman looking into the tomb, which first made him famous. M. Rodin's smaller work, "Paolo and Francesca" (69), is in the centre of the South Room; this, however, is one of those rather fantastic groups of figures which seem only half disengaged from the marble, or as if made in some substance which has half melted down, of which this sculptor has set the fashion; but these will not retain their position in the art when the temporary taste for this kind of work has toned down. Of the works of Meunier, who was in sculpture a good deal what Millet was in painting, there is a considerable collection, all of high interest and power of a certain kind. Among the work by English sculptors Mr. Havard Thomas's little bas-relief of a figure from real life, "The Camomile Gatherer" (16), is very clever and far superior to the "Lycidas" about which such a talk was made last year. Mr. Alfred Drury exhibits his study for a head of St. George and the head called "The Spirit of the Night" (42 and 43), both of which, if we remember right, have been seen at the Academy. Mr. Paul W. Bartlett, a sculptor with an English name but who dates from Paris, exhibits two cases of bronzes (40 and 45)—lions' heads, figures of lions, and other small works, which (whether intentionally or not) have a kind of air of being antiques, and a small-scale figure of a "Man Crouching" (68), which is a good piece of work.

The pictures commence in the South Room, where the presence of such a work as Mr. Neven Du Mont's "John Jorrocks, Esq., M.F.H." (72), lent by the Cologne Museum (how did it get there, of all places?) indicates that the Committee have been obliged to be not too particular in taking what they could get to fill the walls. A life-size portrait of a lady by M. Boldini (79) shows this artist's usual clever vulgarity of style. M. Besnard's "Au Bord du Lac" (89), an impressionist view of a family bathe, occupies another centre position in a not very interesting manner; but this painter has realised two fine and powerful cloud effects in his two coast scenes (88 and 90). The fourth centre position is occupied by Mr. Greiffenhagen's portrait of Mrs. Greiffenhagen, as sombre in key as the Boldini opposite to it is loud and flashy, but it is an interesting portrait study both in colour and design. M. La Touche's iridescence of colour is illustrated in his picture of "Le Mariage de Riquet à la Houppe" (81); Herr Schuster-Woldau, of Munich, exhibits a portrait of a little girl (112) quite obviously "made in Germany," both subject and treatment; and among the landscapes in the room is a small American work "Sheep Pasture" (84), by Mr. H. W. Ranger, very pleasing in colour and light; a "Woodland" (77) by a Dutch artist, Herr Schregel, which seems to owe something to the inspiration of Diaz; a not very good view of "Nôtre Dame, Paris" (75), by M. Rafaelli; and a good "Moonrise on the Seine" (94), by Mr. R. Macaulay Stevenson.

Sir James Guthrie holds the place of honour in the West Gallery with a very fine and heroic-looking full-length of "The Marquis of Tullibardine" (137), faced by Mr. Lavery's portrait group of two ladies (160), where blue and white dresses and lighter blue sunshade make a most effective colour combination. The centre of the north wall is occupied by the late Robert Brough's fine portrait of Lord Justice Vaughan Williams; so that Scottish art is rather pre-eminent in this room. On the south wall we have a large and new picture by Herr Israels, entitled "Indoors and Outdoors" (124), looking on to the landscape from inside a cottage door; but—as is too often the way with Dutch painters, even of the calibre of Herr Israels—the outside scene seems to have no

more brightness or colour than we get inside the doorway, and the figures are not of the highest interest. Among the best works in this room is Mr. Bertram Priestman's gloomy and powerful landscape, "A Stormy Evening" (144). Mr. Millie Dow's "The Enchanted Wood" (131) is a poetic twilight landscape spoiled by a too large and unnatural-looking moon. Mr. Paterson's small landscape sketches, "Autumnal" (133) and "Wind in the Trees" (135), are suggestive little compositions; Mr. Morrice's "Marine" (139) is a pleasant sea-piece; Mr. H. Goodall's "Camber Castle" (140) is a vigorous splash of windy sky and trees; and Mr. Oliver Hall's "Outskirts of Parham Forest" (164) is a good example of landscape composition. Mr. William Strang, in "The Sea Pool" (147), surprises us by producing a quite classically designed nude. What seems to pass for landscape at Munich is curiously illustrated by Herr Frank's large work, "The River's Mouth" (155), as flat and airless as if it were cut out of wood.

The North Room contains some of the curiosities of the exhibition; among them two or three of the utterly unlovely and repellant figure studies by Manet which it is the fashion to admire, and a perfectly hideous nude study (if such a thing can be called a study) by M. Legrand, "Le Bain" (236), an ill-drawn awkwardly posed figure, plastered over with paint laid on thick without an attempt at truth of colour or texture. Into the much-abused Royal Academy such a work would not have a chance of admission, which is at least one thing in favour of the Academy; and the same may be said of Mr. Conder's ridiculous "Croquet Players" (225), which one might suppose to be exhibited as a joke, but which in the present state of "art-criticism" (?) will no doubt find its admirers. M. Charles Cottet's "Au Pays de la Mer" (171), a triptych which has been seen, if we remember right, at the Salon, is here, and is an example of the artist's work before he took to painting figures in the hard black style which he has recently affected. Mr. Cameron's "Glencaple" (176) is a good landscape; M. Cézanne's "Nature Morte" (199) a good Still Life painting; Boudin's "La Plage" (183) shows a good sky; Mr. Neven Du Mont's "Souvenir de Romney" (219) is a pretty figure sketch answering to its title; Mr. W. Nicholson's portrait of a lady seated at table (232) is graceful and spirited; and Mr. Sydney Lee's large and solid painting, "The Stone Bridge" (234), has a great deal of merit as a picture of a class of architectural subject which is seldom treated in painting on so large a scale and in so bold a manner. But the pleasure to be derived from the picture part of the exhibition, taken as a whole, is but of a doubtful and chequered description.

We observe that at the luncheon given by the Society at the Savoy Hotel on Wednesday, a long letter was read from M. Rodin explaining the objects of art (he alone, apparently, being supposed to understand them), in the course of which he remarked that the great sympathy shown for their Society perhaps arose from the fact that "au fond tout le monde attend ces artistes simples et humains, qui montreront de leur force claire que la beauté n'est pas l'exception, qu'elle est partout." Those who are of a cynical turn of mind may perhaps find a certain amusement in studying these words in the presence of some of the paintings exhibited The real meaning, nowadays, of the sentiment that "la beauté est partout" seems to be that there is no difference between the ugly and the beautiful.

DRAIN-PIPES AND MOTOR TRAFFIC.—Dr. Wynter Blyth, the Medical Officer of Health for the Borough of Marylebone, in his Monthly Chronicle for November, 1905, remarks in regard to this subject:—"The vibration from heavy motor traffic and from underground railways is affecting this district, and indeed the whole metropolis, more or less seriously along the main channels of traffic. There have recently been instances of absolutely new drainage becoming defective from fracture of the pipes, and in the writer's opinion in certain situations in which vibration is to be expected the only safe way will be the construction of iron instead of earthenware drainage. Drainage is a costly matter, and when once put down should not require renewal at least a quarter of a century."

ROYAL ACADEMY LECTURES.

ON Monday afternoon Mr. Clausen gave the first of his set of four lectures to the Royal Academy students, the subject being "Drawing." Something seemed to have gone wrong with the Royal Academy management, for the numerous visitors were kept standing in the Hall till nearly the time for commencing the lecture, when they were bidden to come up the main stairs and enter through the Exhibition rooms; and on Mr. Clausen taking his place at the lecturer's desk he had to inform his audience that the lantern had been forgotten and he would be unable to show any illustrations; a kind of mismanagement which is not very creditable. The illustrations which should have been given at this lecture were promised for the next one.

Drawing, Mr. Clausen said, was a convention; there were no boundary lines in nature; the forms of surfaces were defined by difference of tints. Yet the expression of form by lines seemed to be a process that naturally recommended itself; all primitive art was expressed by outlines, and was in early stages regarded as a sufficient method of expression; modelling the surfaces by shading was a later development. Drawing was a means of expression, and this view of it enabled us to realise that there might be an expression, perfectly intelligible to its originators, in some forms of drawing to which we had not the key. The forms of Celtic drawing, which seemed strange and meaningless to us, had no doubt a distinct meaning to those who drew them and those for whom they were made. Even now children were satisfied with exceedingly crude representations of objects, and primitive peoples were in this respect in the position of children. Two types of drawing might be distinguished—the old symbolical type and the modern realistic type. Blake's drawings, which were full of meaning, were nevertheless to a great extent symbolic rather than realistic. Rembrandt might be said to represent the opposite extreme; the mere representation of form as influenced by light. Drawing appealed to the intelligence, first in the search for form; secondly, in the effect of light and colour on form.

In the drawings of old masters we saw the scaffolding on which their finished works were built; and it was worth notice that these old drawings were all made with a definite purpose, not, as in the modern work in the schools, for mere study of the form; and the old system of pupilage, when the student was employed on work in progress, had its advantages over the mere school study for the purpose of obtaining aptitude. The old drawings of the figure were definite; ours were tentative; we reposed too much on the model. School work was only a means to an end, and sometimes led to the consequence of the draughtsman being helpless with the figure unless he had a model before him.

There were few drawings by the early painters known and accessible. But we had unfinished pictures, such as one by Piero della Francesca in the National Gallery, in which we could see the lines of the first drawing on the panel. The older Italian drawing was, like the Flemish, rather angular in manner, but the figures were of a finer type; a difference partly racial, the Italians being a finer type of humanity than the Flemings, but partly also owing to the tradition of the antique, which had never been quite lost in Italy, while the Flemings had no ancient art to support them. They aimed at truth to nature and precisibn of line, as the works of Van Eyck and Dürer plainly showed. A study of Dürer's for the hands for his Adam and Eve carried precision and attention to nature as far as it was possible to carry them. Early German work was thorough in this sense, but mannered; there was a tendency to make the lines "curly," not like the severe line of the Italians. We could see this to some extent even in Holbein, but not in his best work, especially his well-known drawings of heads. Here he was entirely free from mannerism; and it might be observed that in the highest type of drawing, such as these, we were never reminded of any other style. In short, the object of the drawing of the northern artists was observation only, while the Italian artists had a standard, and a greater sense of beauty. Why the one was beautiful and the other was not would lead into the very abstruse question, what was beauty; which they could not go into now. He thought that practically the Greek artists had, after long effort, fixed a standard of beauty of the human figure, which had been accepted and had influenced subsequent art. The modern painters who had called themselves pre-Raphaelites were, he thought, largely influenced by Flemish art; their early drawings were very well worth study, those of Millais especially, in book-illustrations, which were equal to Holbein. Returning to the Italians, we found in the drawings of Leonardo da Vinci even greater evidence of genius than in his few finished pictures. His anatomical studies showed how he aimed at obtaining a full knowledge of the construction of the figure; and with this certain knowledge, thus acquired, his line was always precise. The drawings of Raphael might be considered to represent the high-water mark of figure-drawing; they were given with the greatest economy of means, and the construction of the figure was always well expressed. Among his modern followers there was perhaps no one equal to Ingres in these qualities. (Several beautiful small-scale figure-studies by Ingres were hung on the wall, balanced by some of Leighton's on the other side.) Ingres might be said to have recreated the academical spirit in drawing, in its best sense. He was one of the greatest draughtsmen who ever lived, and one never wished his line otherwise than it was. Leighton's drawings showed the same fine tradition. The main point about these, as about the drawings of Michelangelo, was that they showed the human figure as it exists. Most of these drawings probably occupied no more than half an hour in execution; they showed the swift application of great knowledge. To gain this power one should not merely *imitate* the model (in the life school), but *learn* from it.* Watts's drawings, then in the exhibition, were an instance of this; they were studies of the figure not from the picturesque but from the constructional point of view †—outlines drawn with the quiet authority of a master. Mr. Clausen mentioned also the drawings of Alfred Stevens, who was decorator, sculptor, and painter, as worth attention, and also those of Millet, some of which were as fine as the work of Watts; and all were permeated by the same object—expression by definition of form through knowledge of construction.

Ought we to try, in study from the model, to express surface gradations of contour? He thought not; the study of the form was difficult enough in itself; and besides, if one began expressing surface gradations, this could only be done through differences of tone, and then the tone of the whole surroundings—the background, etc., must come in, and further complicate the problem. It was better to think of the form only, the firm basis of the artist's work, in the first instance, even if he had eventually to give it a second place. Mr. Clausen read a very interesting and frank letter from Whistler to Fantin-Latour, written in 1867, in which Whistler lamented the temptation he had yielded to, of getting over problems of drawing by facility in the use of colour; saying "what a painter I should be now if I had studied form more carefully," or words to that effect. The influence of Courbet, he said, had been very injurious to him (not so much that he disliked Courbet's art as that he disliked his method); and he added, "Why was I not a pupil of Ingres? How healthy his influence would have been." This testimony of Whistler was valuable, Mr. Clausen said, because as far as Whistler was an influence the qualities in his work that were now imitated were those that were not the best in it. Should we take any particular artist's manner in drawing as an example to follow? If so, Ingres and Watts were the best examples; try to imitate their qualities—accuracy and simplicity. To take

* We heard of an able teacher at the Slade School saying one day to a pupil at work from a cast—"You are not to copy that, you are to *draw* it": an admirable distinction.—ED.

† We may remind our readers that we have already called attention to this quality in the Watts drawings in our article on the Loan Exhibition—that they are outlines taken from various points of view in order to get the construction of the figure.—ED.

the manner of some particular artist of earlier times was very likely only to lead to a "pose." But it was largely a question of temperament; each man expressed himself best in his own way.

THE BRITISH SCHOOL AT ROME.

THE first open meeting of the British School at Rome for the current season was held at the School on Thursday, January 4, and was attended by the British Ambassador (Sir E. H. Egerton, K.C.B.), the Swedish Minister (Baron de Bildt), Professor Körte, First Secretary of the German Institute, and other foreign scholars, and by many British residents in Rome.

The Assistant-Director (Mr. T. Ashby, jun.) read a paper upon "XVIth Century Engravings, Illustrative of Roman Sculpture." He began by pointing out the importance of the subject in relation to the catalogue of the municipal museums, which the School has undertaken. Much might be learnt from early engravings as to the condition of sculptures when found before they have undergone restoration, as to the date and locality of their discovery, and as to the various collections through which they have passed.

Though the majority of XVIth century engravings which are influenced by the antique do not reproduce it with sufficient accuracy for the present purpose, there are a certain number of actual representations of famous statues among the engravings of Marc Antonio and his school; and of these many—especially from the hand of Nicolas Beatriset—came to form a part of the collection known as the *Speculum Romanæ Magnificentiæ*, published by Antoine Lafréry, which, however, was quite eclectic as regards sculpture, and included views of all sorts relating to Rome of both the Classical and the Renaissance period.

The first collection of engravings of sculpture exclusively was the first edition of the work of Joannes Baptista de Cavalleriis (*Antiquarum Statuarum Urbis Romæ liber primus*), published before 1570, in which year a reprint of the original undated edition appeared in Venice. It contained fifty-two plates only, and dealt with a small number of collections. The noteworthy omission of the Vatican was due, no doubt, to the practical inaccessibility of the collection under the anti-humanist, Pius V. The first edition of a larger work (100 plates) appeared after his death, but before 1578, and was reissued in 1585. The first twenty-five plates of the original were, for some reason, not used, but new plates were engraved. The original plates reappeared, however, in subsequent publications of the XVIIth century.

The third and fourth books (100 plates) appeared in 1595, and were arranged according to subjects rather than collections. The engravings were inferior in style, but showed independent research, which was not the case with the album of Lorenzo della Vaccaria (1584). In the meanwhile, collections of busts were issued by Achilles Statius (1569) and Fabricius Arsinius (1570), both published by Lafréry.

Mr. Ashby then gave a short description of the wood-block plan of Venice of 1500 (which was really something between a plan and a bird's-eye view), a copy of the first edition of which he had recently acquired. It was in six sheets, measuring altogether about 10 ft. by 5 ft., and was perhaps the finest work of the kind in existence. The accuracy and fulness of detail were remarkable, and in these points it was far in advance of any of the plans of Rome of the XVIth century. The author was unknown; it was often attributed, but without any certain proof, to Jacopo de' Barbari.

The second paper was read by Mr. A. T. B. Wace, Librarian of the School. He discussed two Roman historical reliefs in the Louvre, one representing an *extispicium* before the temple of Jupiter-Capitolinus, the other showing the sacrifice of two bulls. These were formerly in the Borghese collection, and at the end of the XVIth century in the Capitoline collection. He proved that the first relief was found about 1540 in Trajan's forum by reference to some sketches of Antonio da Sangallo the younger. Sangallo gave a full description of the pediment of the temple which was now lost, but of which several XVIth century drawings survived. He connected with this a mention by Flaminio Vacca of the finding of some historical reliefs in Trajan's forum, including a relief showing a Dacian rider swimming a river. Vacca's statement that these reliefs were in the house of Prospero Boccafaduli was confirmed by a note of Pierre Jacques in his drawing of this relief. Mr. Wace, therefore, conjectured that the Louvre reliefs, the Dacian, and other relief fragments (now lost, but drawn in the famous Cordex Orsinianus Vatican, 3439) were all found together in Trajan's forum about 1540. The Louvre relief represented the *nuncupatio veterum* before Trajan set out on his Dacian campaign. It thus fitted in well with the Dacian battle scenes on the arch of Constantine. The other Louvre relief, with the fragments drawn in the Orsinianus, represented, perhaps, the Parthian triumph of Lucius Verus and Aurelius in 166 A.D. This agreed well with the style, which was totally different from the Trajanic reliefs, and much more like the Aurelian panels on the arch of Constantine. Thus it seemed likely that Trajan's forum was not completed during his lifetime, but was finished and decorated by Hadrian and the Antonine emperors. All these reliefs, with perhaps some others, were probably in the collection of Prospero Boccafaduli, who was in charge of the building of the capitoline palaces from 1555 onwards. He probably kept them there hoping to sell them to the Municipality. On his death, or before, the two Louvre reliefs passed to the Borghese collection, and the Dacian to the Villa Medici; the rest of his collection of reliefs has disappeared.

Professor Hülsen, Second Secretary of the German Institute, made some remarks on the last paper, emphasising the importance of the discovery of the provenance of the Louvre reliefs, especially as regarded the architecture of Trajan's forum.

MAGAZINES AND REVIEWS.

THE *Burlington Magazine* heads its issue with a plate of the Rokeby Velasquez, and an editorial article on this highly unsatisfactory topic, the end of which we have now little doubt will be that the picture will be lost to England. The position as put in the article is that England is somewhat in the case of Italy in the XVIIIth century; she has great possessions in works of art, such as no other European country can match, but she is surrounded by countries in which money is being made more quickly, and from a buyer of works of art has become a seller, to such an extent that in a few years the choicest of her treasures will have vanished for ever. But is it exactly the case that England has less money to spend than formerly? Is it not rather that the class who have chiefly owned great pictures have lost money, and therefore want to realise; and among the people who now have the money there is not sufficient interest in art to spend money on it. Neither an English Parliament nor an average Englishman can understand that the retention of great works of art in the country is an object worth paying for. It will take at least half a century to educate Parliament and the Englishman up to that, and by that time the finest pictures will be gone. There are several good suggestions in the *Burlington* article, and we especially agree on the importance of endeavouring "to save for the National Gallery, at any cost, some twelve or fifteen pictures of the highest importance which, if once lost, could never be replaced." As is rightly remarked, the value of a permanent collection goes by quality rather than quantity; "three or four masterpieces in a gallery make it important; twenty or thirty make it a famous place, which all students of art must visit." All this and much more in the article is quite true, but it will produce no effect; the average Englishman will pass by on the other side. Professor Baldwin Brown concludes his article on "How Greek Women Dressed." In Part IV. of "English Architectural Leadwork" Mr. Weaver deals with lead fonts, of which some fine illustrations are given, especially of the Brookland and Pyecombe fonts, the former the more archæologically interesting, the latter the more decorative. An article on "The Furniture at Windsor Castle" (a review of Mr. Laking's book) is the occasion for the production of some illustrations of French highly elaborated furniture of the Louis Quatorze and Louis Seize periods, with its exquisite detail of the most artificial and, one might say, soul-less character; for that is the impression that this class of French work produces—the desire for finish of workmanship rather than for real beauty.

The second number of the *Magazine of Fine Arts* (which is dated "December," but appears to be issued near the end instead of the beginning of the month) devotes an article to Piero della Francesca, as "the most modern of the pre-Raphaelite painters," and according to Mr. Housman, the author of the article, the first painter to discover light as a pictorial subject; but we are rather sceptical about these kind of special attributions, which always strike us as being a part of the furniture or stock-in-trade of modern writers on art. Piero della Francesca is a painter worth study, but not one to arouse enthusiasm. More interesting to us is the article on and the numerous illustrations of the work of the great French sculptor Barye, the Michelangelo, one might say, of animal sculpture, though his "Theseus and the Minotaur" shows how powerfully he could also treat the human figure. He at least is an artist about whom there can be no doubt; the eight illustrations of his works given here are enough in themselves to show his extraordinary versatility of power. M. Geffroy, who contributes the article, does not quote the highly characteristic anecdote, worth repeating here, of Barye and Thiers; when Barye had been modelling an eagle seated on a branch, for some official commission, Thiers (officially) came to see it, and was peevishly criticising the position of the bird's claws, which he said was not correct; "an eagle grasped thus"—and was proceeding to illustrate it with his hands, when the sculptor, who had had enough of it, cut him short with—"Enfin, M. Thiers, vous n'êtes pas un aigle"! We are glad to see an article by Sir J. D. Linton on "The Art of William Etty," a painter who deserved more recognition than has been accorded to him of late years. "Woven Fabrics of Sicily," "French and German Champlevé Enamels," and "The Landscapes of Rubens," are among other articles in the number; the last named exceedingly interesting subject is treated by Mr. Robert C. Witt. We entirely agree with him in his estimate of the value and importance of Rubens's landscape, especially remembering, as Mr. Witt reminds us, how little had really been done in landscape before his day.

The *Architectural Record* (New York) contains an illustrated article on "Japanese Houses," with full descriptions of their building methods, and a reproduction of an old Japanese sectional working drawing which was used in the construction of several houses; for of course the methods of construction and design vary little. Some other interesting drawings from an old Japanese book are also reproduced. In an article on the Minnesota State Capitol, which had been sympathetically described in a previous issue, Mr. Russell Sturgis takes exception to that building and to the admiration for it, mainly apparently on the plea that the dome is only a kind of copy of the dome of St. Peter's, not so good as the original, and merely "one more added to the host of public buildings copied from the neo-classic architecture of Europe"; and he suggests that at this rate one might as well have copied St. Peter's dome entirely, as the result would have been better. There is something in this, though it is surely rather late in the day to begin objecting to American adoption of European classic forms, after the amount of French Academic architecture which has been produced by leading American architects. After all, the centre dome has a certain long association with State and municipal architecture on a large scale, and one can sympathise with city councillors who say that they want their building "to look like a Town Hall." The Minnesota dome seems a graceful one; our complaint against the published design was that it wanted more emphasising at the ends of the façade. We may suggest, however, that it is perfectly possible to employ the dome on a State Capitol without employing borrowed Renaissance detail with it, and Mr. Sturgis's criticism may do some good if it suggests to any American architects to recollect that the dome, as an architectural feature, is not after all the exclusive property of the Renaissance style, though it happens

to have been most largely developed under Renaissance influence. The First National Bank of Chicago, to which an article is devoted, seems to be a truly palatial building internally, ruined externally by greed of gain. As the writer of the article says, there are two alternatives for a bank which proposes to build for itself on expensive land in a large city—either to build a one or two-story block for its own exclusive occupancy, or to build an immensely high building and let off fourteen or fifteen stories. It is pretended that financial reasons have nothing to do with the selection of either method; but it will be difficult to make any rational person believe that. The First Chicago Bank managers have chosen to erect a building like a cotton-mill at the meeting of two streets, and use the basement as the bank; it looks in the photograph as if it were an acute angle, which would make the appearance still worse; whether it is so or not is impossible to say with certainty, for it is a singular thing that although the *Architectural Record* seems intended as a serious professional publication for architects, a plan seems to be one of the last things it thinks of giving. In any case one can only come to the conclusion that the First Chicago Bank is a building with a sumptuous architectural interior, completely ruined and reduced to commonplace internally by this erection of a grid-iron building over it, and moreover its whole architectural character as a bank destroyed. Imagine the Bank of England treated in the same way, with a building of thirteen stories erected over it: its "Bank" character would be gone at once. In this sense the First National Bank of Chicago is an object-lesson and a warning.

The *Berliner-Architekturwelt* this month is mainly occupied with decorative detail and furniture, some of which is very interesting. Five designs for stained glass, by Herr Franz Eissing of Charlottenburg, though they will seem rather odd to English eyes, are worth attention because they suggest a kind of decorative treatment which provides for rich colour effect in conventional foliage, etc., in a manner which is new and not connected with any past style, either Gothic or classic. We cannot tell of course what the colour may be from these monochrome reproductions; but we can see that, granting an eye for colour, the nature of the design gives plenty of scope for it in a manner suitable to the character of stained glass. The illustrations of furnished rooms show that there are fortunately some Berlin architects or furniture-makers who still design furniture in a sensible and reasonable manner, instead of twisting it all into ugly and unexpected curves. The *Architekturwelt* also issues a large special number devoted to the life and works of Herr Messel; to this we shall return.

In *The World's Work* the writer under the name of "Home Counties," who thinks he knows more about architecture and building than he really does, is holding forth this month on "building without a builder." He is perfectly right in condemning the contract system, which is the curse of modern architecture, though his reasons for condemning it are quite different from ours. The paper proceeds to the sneers at architects which are now popular with English magazine writers (no French magazine would insert such articles—the French public knowing better what an architect means), and unearths the old absurdities of the *Quarterly* Reviewer, which have been exposed and done with for a quarter of a century. But one can understand that the digging up of such a diatribe is a godsend to a writer who was ready to champion such ineptitudes as Sir W. Grantham's cottage plans, which were published in *The World's Work* as something remarkable. With critics of this class, anything in architecture is right which is done by ignorant people, whether of the upper or lower class; and every sneer at the educated architect is a bid for a cheap popularity.

"Matter, Motion, and Molecules" is the title of an article in the *Cornhill* by Mr. W. A. Shenstone, F.R.S., is a popular exposition of the scientific attitude of to-day in regard to matter and energy, and is very well calculated to awaken the mind of the general reader on this subject. There is one point that seems rather illogical in the way of putting it. In considering whether a piece of stone which has fallen and lies motionless on the ground is "bankrupt of energy," the writer says: "In the first place the stone may lie on a hill side, and in that case obviously it possesses energy of position, which would become kinetic if we set it rolling down the hill." Surely that is the energy of the earth, not of the stone.

The *Century* gives illustrations of Mr. D. C. French's groups of sculpture, representing the four quarters of the globe, intended for the main front of the new Custom-House in New York. They are good architectural decorative sculpture; but, like most American sculpture so far, rather notable for energy than for style. The same magazine contains also an article on "The Treasures of Pre-historic Moundville," the circle of mounds on the Black Warrior River, in Alabama. The article is by Mr. H. Newell Wardle, of the Academy of Natural Sciences of Philadelphia, and gives illustrations of some very interesting early Indian work. An article on "Up Town, New York," contains some picturesque sketches of the outskirts of New York.

The *Antiquary* contains a long article by Mr. J. Herbert Slater on that very curious phase of mediæval study, the pursuit of the supposed possible elixir of life. The history of the repeated research after this elixir, which, if it were once discovered, would relieve its possessor from the dread of death, is both curious and in a sense pathetic, so many wild hopes were founded on it. A book might be written on the subject; we are indebted to Mr. Slater for a brief outline of it. "The Heraldic Glass in Brasted Church" is the subject of a long article by Dr. W. E. Ball.

CIVIL AND MECHANICAL ENGINEERS' SOCIETY.

THE PRESENT POSITION OF THE SEWAGE QUESTION.

A MEETING of the Civil and Mechanical Engineers' Society was held at the Caxton Hall, Westminster, S.W., on Thursday last week, when a paper was read by Mr. J. F. Reade, A.M.Inst.C.E., on "The Present Position of the Sewage Question."

He said that the number and kind of processes which had been advocated for the purpose of the purification of sewage were very great and various; yet, notwithstanding the fact that many of these had been tried, the present position remained indefinite, in so far as no one of them had been found to be universally applicable and satisfactory. As to the disposal of sewage by applying it to the land, it was early suggested that here was not only a ready, scientific, and economical way of its disposal, but of making a profit as well. But the reasoning was by no means correct. It was based upon the idea prevalent until the discoveries of Pasteur and others that the assimilation by plants of organic matter presented to them in the form of manure was an entirely chemical process, depending on the presence of oxygen; whereas it was now known to be primarily a biological one, also dependent on oxygen. Public opinion took some exception to this means of disposal, on the ground that extensive irrigation with sewage must be injurious to health, but the advocates of sewage farming, and experience, had shown such fears to be not well founded. Present opinion did not condemn properly managed farms as being directly dangerous to health. The promises held out of sewage proving a source of wealth seemed so feasible and proved so fascinating that people clung to it with great tenacity, and even now, when extensive and costly experience had proved it to be very rarely capable of fulfilment, the idea was abandoned only with reluctance. In its practical application the purification of sewage by treatment on land could not always be carried out within reasonable limits of cost. Owing to physical or geological surroundings, a sufficient area of suitable land could sometimes not be got in a convenient position near towns contemplating sewage works. Difficulties such as this, and analogies drawn from the rapid advances made in chemical industries, seemed to open out an excellent prospect to inventors that a solution of the sewage question could be discovered by the aid of chemistry. A vast amount of time and thought had been given to research in pursuance of this idea, but with only a small amount of success. Indeed, it might be said with much truth that the application of chemistry to sewage purification had been a singular failure, because purification, in the sense in which it was understood at the present day, had never been effected by any practical chemical process. The researches of chemists in this direction had, however, not been fruitless. Some valuable processes had been discovered by which precipitation of solid matters held in mechanical suspension and partial solution might be effected, the sewage clarified and deodorised. Such, for instance, were the methods of treatment by lime, by lime in addition to sulphate of alumina, by sulphate of iron and burnt magnesian limestone, by hydrochloric acid and chloride of lime, by sulphurous acid and carbolic acid with magnesia and lime, and by sulphate of iron and lime. All these, in various degrees, caused changes in the physical constituents of sewage which appeared to the eye and had frequently been mistaken and described as a real cleansing of foul water. That some further advance might be made in the chemical and physical cleansing of sewage was possible, and recent investigations into the physico-chemical nature of solutions had proved fruitful in the acquisition of new knowledge concerning them, and might possibly lead to better methods of dealing with waste water. But chemical treatment gave rise to sludge difficulty, and the clarified liquid, drawn off after precipitation of the solids, contained a considerable quantity of impurity, and in that state could not be considered sufficiently free from noxious matters to allow of its being discharged into streams. It was, however, quite a natural step to combine the process of clarifying the liquid by chemical means and its further purification by applying it to land in either of the two ways known until lately as "broad irrigation" and "intermittent downward filtration." Some very good results had been and were at present obtained by means of a combination of chemical and land processes. The chemical treatment was employed to eliminate the grosser constituents, the land afterwards completing the purification of the clarified liquid. But it had been proved that sewage could be purified on land without having undergone any previous chemical treatment; hence, where land of the right kind was available, and if worked intelligently and within the limits of its capacity, chemical clarification was in no way essential to purification. It was soon discovered that sewage could be purified by land without growing any crops; and the original idea of the direct consumption of manurial matter by surface plant life as the only factor in the cleansing process was upset. The passage of sewage through a certain depth of land, from, say, 3 ft. to 9 ft. as limits, was a process of filtration which under favourable circumstances could be made a very efficient one and by repetition capable of giving almost any degree of purification. Strangely enough, these facts did not seem to have induced anyone to search for further explanation. It was not until the discovery of the function of micro-organisms in breaking up the organic matter in soils that new light was thrown on the subject and the way opened for further advance.

At the present day what was known as the bacterial treatment of sewage very nearly engrossed the attention of sanitary engineers, but much hesitation was displayed regarding the details whereby this valuable principle of bacterial agency might be applied. One of the most noteworthy of positive facts discovered was that sewage and all waste substances of organic origin under natural conditions contain within themselves the micro-organisms necessary to break them down into the more simple inorganic compounds. This demonstrated that the cultivation of special organisms was, at all events so far as present knowledge took us, superfluous. Therefore, if sewage was allowed sufficient time, it would effect its own purification. The sewage problem of the present day resolved itself into the discovery of the best means whereby the great natural force—*i.e.*, the vital activities of bacteria—might be made to exert itself with the maximum result to effect purification, though this statement did not exclude land treatment nor clarification by chemical means. The methods of bacterial treatment were various, and differ not

alone in detail, but in principle as well. The greatest divergence was probably that illustrated by the two methods, one of which employed two distinct stages to effect the process, and the other made use of one stage only. The first was exemplified by the septic tank system, and the second by the contact bed arrangement. Much controversy had arisen between the advocates of these two methods regarding the relative merits and efficiency of their proposals. It was, however, now recognised that neither system would alone do all that was originally claimed for it. The septic tank did not completely and indefinitely liquefy the solid part of sewage, and sludge had still to be disposed of. Contact beds sometimes choke and become useless until they have been remade, and a simple process had yet to be discovered which would produce an effluent universally satisfactory according to a moderate bacteriological standard and admissible at all times into unpolluted streams. The important feature to be noted in connexion with the advance made in the developments of bacterial methods, whether carried out naturally on land or artificially in tanks or beds, was their capability of producing effluents which would not subsequently putrify when admitted into streams. This was the crucial test of all purification processes at present. It was not sufficient to sterilise the liquid if putrescible matter was allowed to remain, because under natural conditions it would very soon become foul. Sewage having undergone treatment and reached such a standard might be classified amongst sound, but not of course safe waters. By means of the well-known methods of sand filtration, as practised in town water supplies, water containing considerable organic impurities could be made to attain a very high degree of purification both chemically and bacteriologically by repeated operations. It would be perceived that a link was thus established between the two valuable, concentrated, natural processes of bacterial purification and ordinary sand filtration. They were no doubt intimately related to each other, but in practice it would be impossible to purify raw sewage by sand filtering, and an unfiltered drinking water could scarcely be made fit for use by passing it through a septic tank installation. But it was only a matter of time and cost to cause sewage to pass through successive stages until it reached a degree of freedom from organic and bacterial impurities that it could not be distinguished from ordinary drinking water. There was no doubt that these recent developments had increased the responsibilities of engineers, and careful designing and a full appreciation of the circumstances of each particular case were at the present time more than ever necessary. It was to be hoped that the present Royal Commission would indicate at least some broad principles which should govern the choice in any circumstances, since in developing more powerful and efficient means of dealing with sewage the complexity of the problem had been at the same time increased. A large quantity of literature in the shape of reports, evidence, etc., had been published by the Royal Commission on Sewage Disposal which was appointed in 1898, but the final report, which was eagerly expected, and which, it was hoped, would be more conclusive that what had been heretofore published, had not been issued.

Millions had been spent on efforts to purify sewage, and a large sum was annually required to pay interest on capital expenditure and to maintain and operate the various works established. Notwithstanding this, purification was by no means universally successfully accomplished. Moreover, the effluents were scarcely ever of a uniform character, and were sometimes discharged, even from most efficient works, only very partially purified.

The lecturer then touched on the difficulties which had to be faced in such work, *i.e.*, sudden heavy rain storms, and in certain localities the sudden discharge of vats or tanks containing waste liquid from manufacturing processes. He also briefly reviewed the reports and conclusions of the Royal Commission, and concluded as follows:—

"From this comparison it would appear that artificial processes should ultimately be extensively introduced either to help or supersede land treatment. Where inferior land has been in use this is no doubt going on. But, as pointed out before, hesitation on the part of public bodies is at present more characteristic of the position than any active tendency to make changes, and until the river boards are established and in operation, and working standards of purity laid down, it is improbable that towns will undertake schemes involving considerable expenditure of public money."

THE ROYAL INSTITUTE OF BRITISH ARCHITECTS.

THE fifth general meeting (business) of the session was held on Monday, when the chair was taken by Mr. Edwin T. Hall, vice-president.

The minutes having been taken as read, the Chairman moved "That the council be instructed to enter into negotiations concerning a site for new Institute premises, and to report to a general meeting."

Mr. John Slater seconded, and the motion was carried unanimously.

The following gentlemen were then elected as members:—

As Fellows.

Reginald Blomfield, A.R.A., M.A., Oxon., F.S.A., London.
Walter Cave, London.
H. Chatfeild Clarke, London.
R. Burns Dick, Gosforth, Newcastle-on-Tyne.
W. Hawke, Cape Town, and Norbury, S.W.
G. C. Horsley, London.
B. S. Jacobs, Hull.
Professor W. R. Lethaby, London.
E. L. Lutyens, London.
M. E. Macartney, London.
W. C. Marshall, M.A., London.
E. J. May, London.
J. H. Morgan, Carmarthen.
Ernest Newton, London.
Segar Owen, Warrington.
A. M. Poynter, London.
E. S. Prior, London.
Halsey R. Ricardo, London.
C. J. Tait, London.
R. J. Thomson, Wimbledon.
T. H. Thorpe, Derby.
W. Turnbull, Wellington, New Zealand.
H. Thackeray Turner, F.S.A., London.
E. Prioleau Warren, F.S.A., London.
L. A. Westwick, Mansfield.
F. A. Whitwell, London.
W. H. Woodroffe, London.

As Associates.

J. A. Lucas, Exeter. | W. D. Quirke, London.

As Hon. Corresponding Member.

Martin Nyrop, Member of the Royal Academy of Arts, Copenhagen, Commander of the Dannebrog, etc.; of Gyldenlövesgade 4, Copenhagen.

AMERICAN BRICKWORK.

THE first impression of the English bricklayer, after commencing work in the United States, is the keen competition among his fellow-workmen; unfortunately not in the direction of quality or neatness, but of speed alone.

The bricks are all kiln burnt, have no frogs or hollows of any kind to serve as key for mortar, are very small, averaging 8 in. by 4 in. by 2½ in., as compared to the London 9 in. by 4½ in. by 3 in., and are consequently lighter to handle; the gauge for face work is about four courses to 10 in., and for rough work about nine courses to 2 ft., there being no standard gauge in the writer's experience.

The lime used is very fat and white, the chief cement being "Rosendale" (corresponding more or less to our Roman), of a dark brown colour, which is very much used in sewers and waterworks because of its hydraulic qualities, and it will take more sand than our "Roman." Tubs are used instead of mortar-boards, and

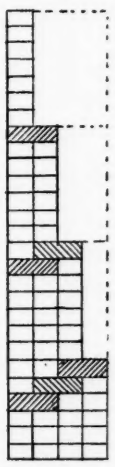


Fig. 1.

are about 2 ft. 6 in. square, with sloping sides, and about 8 in. deep.

The bonding of the brickwork is of the most elementary description, such a thing as sectional bond not being even dreamed of. The rough work usually consists of five, seven, or even nine courses of stretchers to one course of headers, the walls being built from one side only, the overhand side being built first in a series of steps (Fig. 1), the lower headers being used to stand on, and the upper ones as ledges to place the bricks ready for the overhand course. Starting from a quoin, no closer is used, two headers with a cross-joint breaking-joint about ½ in., as the rough bricks are about 8½ in. long and 3½ in. wide, and no care is taken in the heading course to guard against "straight joints."

In house or shop building, when not built with a steel skeleton, the inside walls are all carried up independently of the front, "blocking courses" (Fig. 2), instead of

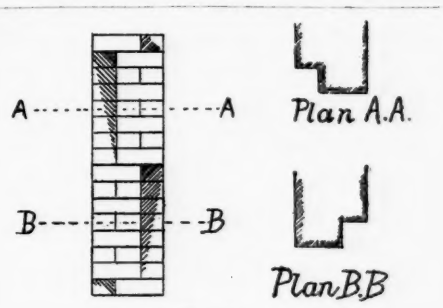


Fig. 2.

"toothings" and "anchors" (tie-irons), being the only provision for bonding the front to the cross walls.

The front is usually built by "lumpers," or piece-workers, and is generally in half-bond (Flemish bond being very rarely used), tied in at rare intervals with a "clip course" (Fig 3)

Fig. 3.

perhaps every fifth, seventh, or ninth course. The best bricks used for front work are known as "Philadelphia pressed," red in colour, with a very true arris, and are laid in fine, pure white mortar with a joint of ⅛ in., being only "buttered," and not bedded solidly. As the mortar squeezes out on the front when the brick is laid it is left till it gets stiff, and is then cut off with the trowel, thus doing away with the liability of smearing the face of the brick, which would occur if the mortar were cut off in a soft, wet condition. As the bricks are laid they are given a slight overhanging tilt, which enables the work to proceed more rapidly, as less care is needed than if the work were left perfectly straight and true, for when looking up the face of the work there is no projecting under edge of a brick to be seen, and it looks perfectly smooth, but when looking downwards, which, of course, is not the way a building is viewed, the face appears to be a series of ledges. The joints are finished with a small trowel, cut off top and bottom, and correspond to our tuck-pointing work, without the artificiality of red stopping.

There is one specially fast style of laying bricks which is not universally known, and is called the "Boston Stroke," no doubt because it originated in Boston, and which is chiefly used on rough work (sewers, etc.). It consists of picking up one brick and enough mortar for that one brick at a single operation, and as no mortar is spread, but the brick pressed home in the mortar with the hand only, it is obviously very labour-saving, as compared to the usual method of stooping for mortar only, then spreading the bed for perhaps three or four bricks, stooping separately for each brick, and by the time the third or fourth brick is laid the mortar is stiff and the brick is laid with great difficulty.

The scaffolding, being of a very simple

character because of the overhand work, is built up on each floor, and consists of "horses," which are really elongated carpenters' stools, about 4 ft. 6 in. high and 5 ft. wide, while the scaffold "boards" consist of 9-in. by 3-in. planks in about 10-ft. lengths, two "horses" to each length. This system would be used for three tiers in height, and then, if necessary to go higher, standards, ledgers, and putlogs would be built up to make a platform for the "horses" to be used again. These standards, ledgers, etc., would be composed of rough timbers to hand, and not resembling in any way the poles, putlogs, and boards so dear to the London scaffolder. J. A. W.

Fifty Years Ago.

FROM THE *Builder* OF JANUARY 12, 1856.

ON the 3rd inst. Professor Cockerell commenced his course of lectures on Architecture, at the Royal Academy, to a smaller audience than we would have seen there, mainly owing, as we believe, to the want of proper notice to the public. The now veteran Professor apologised for his reappearance for the third time since his announcement of a successor who would give to the students his new lights and a fresher activity, suited to our times, especially after a fifteen years' prosecution of these lectures, through the same hands and enunciation; but his appointment had not yet been concluded in the slow progress of academic changes. With respect to academical provisions, he must say that the comparison of our own architecture with those of France showed us to be wholly deficient—that paternal government contrasted with our orphan government most advantageously for our instruction. It might be called the comparison of the system of protection and the voluntary and free-trade system, which might do much that was good, as the Institute and others, but there must be much that perished in the wearing. Concentration and a systematic order and administration, as in France, of all education—of this, as of other departments—was most desirable. We had learnt, by fatal experience, what the neglect of such administration was in war—it could not be doubted that it might be so in peaceful occupations, if put to the test, no less to our disadvantage; and it was the deliberate opinion of the scientific English members of juries in France that the Fresh protective system of culture, encouragement, and honours, was fast leaving our own orphan and desultory system in the rear. The architectural drawings of the *monuments historiques*, and of the *grands prix de Rome*, greatly surpassed our national productions in diligence, style, and beauty, and were examples to follow.

RENOVATION OF CLUB PREMISES, BRADFORD.—The premises of the Bradford Liberal Club have recently been repainted and redecorated. The whole scheme was carried out by Messrs. E. Harland & Sons, under the direction of Mr. B. D. Fairbank, architect.

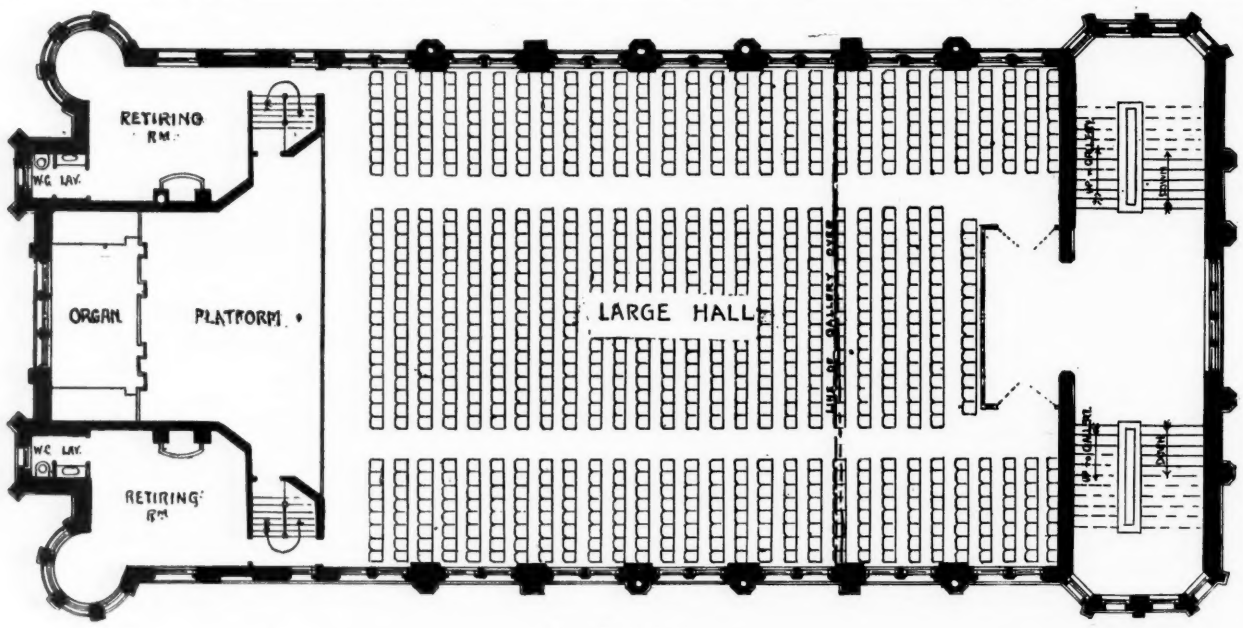
Illustrations.

PROPOSED CHURCH HOUSE, MANCHESTER.

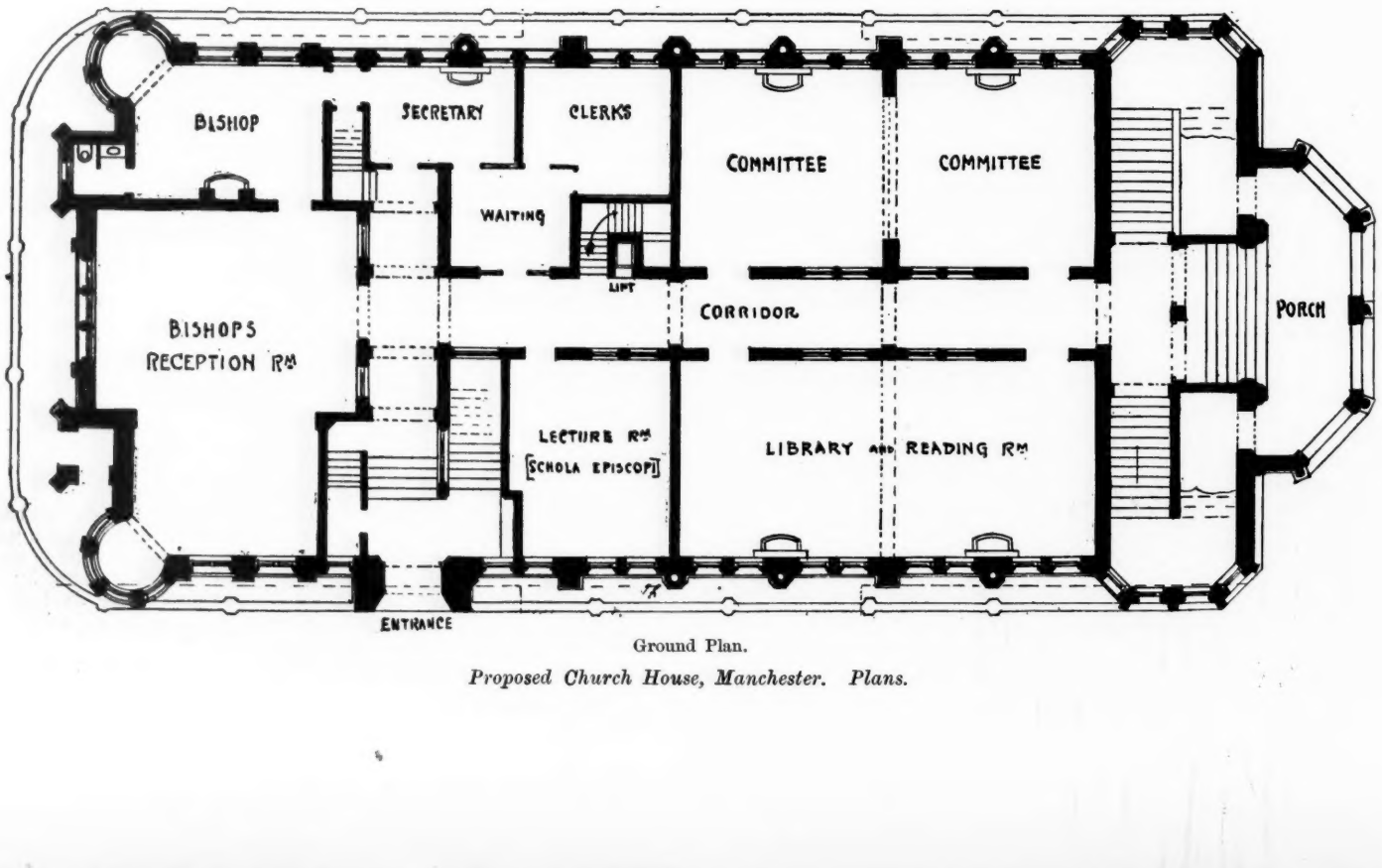
THIS design was made with special reference to occupying the site of the present church of St. Peter's, situated in St. Peter's-square, now proposed to be removed. A portion of the present site has been added to the surrounding streets for the benefit of traffic at this point, which is very considerable. It is an "island" site, and even if the whole of it were allowed to remain open, some at least would probably have to be taken for the purpose of road widening.

The main entrance is at the Peter-street end, and is in the form of an angular porch. The upper floor is occupied by a large hall to hold 1,200 people, available for public meetings, lectures, or sacred concerts, with suitable platform and organ. A smaller hall is provided on the lowest floor to hold 250. Accommodation has been provided for the requirements of the Bishop of the diocese, for the Church Conference, Bishop's Commission Scholæ Episcopi, as well as for diocesan societies, home and foreign missions, Church Defence and other institutions, library and reading-rooms, etc.

The building is proposed to be executed in stone, and the style of architecture adopted is Perpendicular Gothic freely treated. The architects are Messrs. Smith & Matley, of Ridgefield, Manchester.

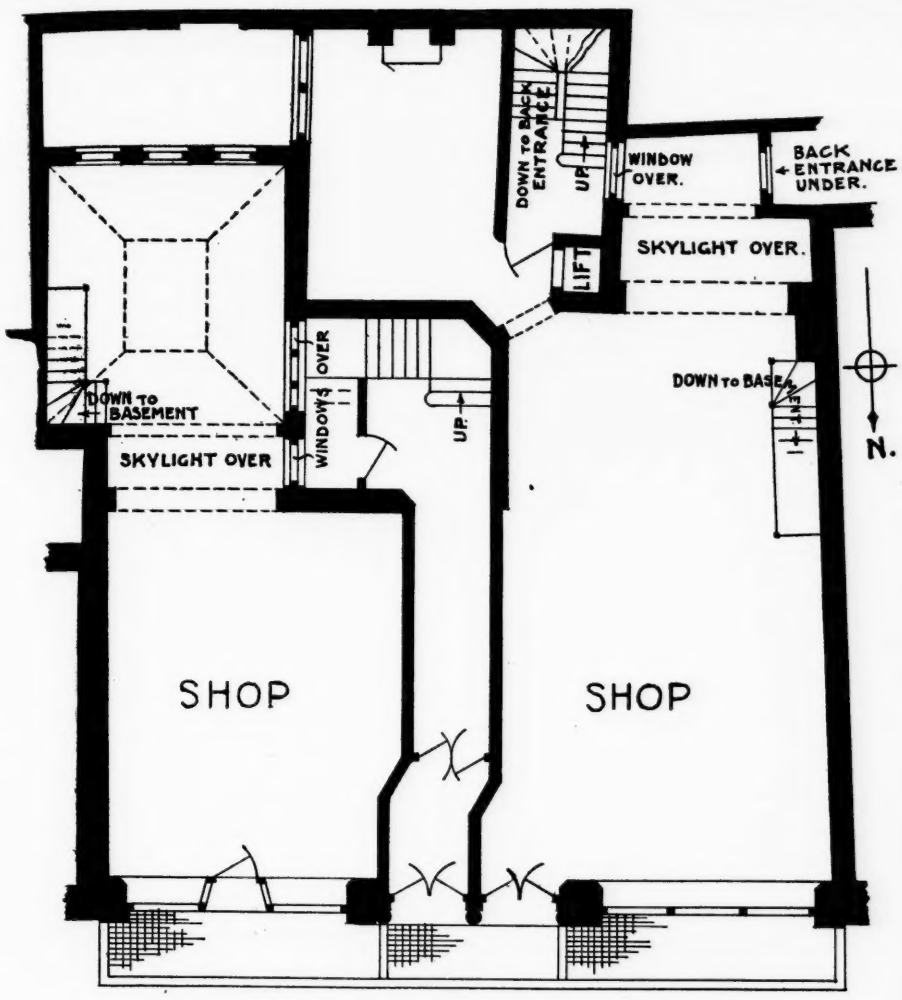


First Floor Plan.



Ground Plan.

Proposed Church House, Manchester. Plans.



PLAN OF GROUND FLOOR

SCALE OF 0 5 10 15 20 25 30 FEET.

Premises, Nos. 45 and 47, Wigmore-street.

NOS. 45 AND 47, WIGMORE-STREET.

THESE premises have recently been rebuilt in this increasingly important thoroughfare, and are arranged for business purposes on the ground, first, and second floors, with a residential flat on the third floor, and another flat on the fourth and fifth stories. The front is faced with Lawrence's rubbers and Portland stone, the builders being Messrs. James Simpson & Son, of Paddington-street, and the architect Mr. F. M. Elgood.

THE MANSION HOUSE, DONCASTER.

THIS is said to be the oldest mansion house in England, being erected prior to those of London and York. The drawings here shown are from measurement of the building as at present existing. In Paine's original design it was intended to add wings on either side, which would have added considerably to the imposing character of the building.

James Paine published in 1751 a book with the plans, elevations, and sections of the mansion house, and in which appears the following somewhat quaint Preface describing the origin and purpose of the building:—

"The Corporation of the antient Town of Doncaster in YORKSHIRE, being honour'd at their Entertainments with the Company of the neighbouring Nobility, and Gentry, were frequently in great Distress for suitable Rooms to receive them in, and therefore determined, in the Year 1744, to build a Banquetting-House. And in Case any Mayor was inclined to keep his Mayoralty in it, Care was taken to provide convenient Apartments to receive a Family. Having at that Time the Honour to be engaged in several Gentlemen's Buildings in that County, I was made Choice of for their ARCHITECT. The Designs were accordingly prepared, and the FOUNDATION-STONE laid in the Spring of 1745. But the Rebellion breaking out the latter Part of that Year, the Work was stop'd early, and the Walls were cover'd. Before the Spring following, the Corporation was pleased to desire me to undertake it according to the Estimate deliver'd in. To which agreeing, I proceeded with the Building, and finish'd it in the Year 1748, with the Approbation of the Gentlemen who engag'd to inspect into it, on Behalf of the Corporation, and to the general Satisfaction of that worthy Body."

The illustrations are from measured drawings by Mr. E. Holsworth Walker, of Manchester.

"UNDER THE TEMPLE PORTICO."

IN my note on this drawing last week there is a correction to make; the amount of entasis of the Parthenon column should have been printed "·66 in.," not "·56": perhaps ·67 is nearer according to Penrose's proportions, but in fact it would have been quite near enough to have written "⅔ in." Penrose's extreme particularity about decimal fractions of measurements is really rather an affectation; if every column in the Parthenon had been whole and uninjured, and could have been measured separately, there would probably have been found differences between one column and another which would hardly have required decimals to express them.

While on the subject, I may add that I very much doubt whether the entasis of the Parthenon columns was really set out as an arc of a hyperbola. If we knew the truth as to the manner of working, we should possibly find that it was arrived at by a much simpler process.

H. H. S.

WILLING'S PRESS GUIDE.—The 1906 issue of this guide—the 33rd annual issue—has been sent us. The work is one of the best-arranged and most convenient guides we know of; it is a handy little book and the information required can easily be found. The guide is published at No. 125, Strand.

THE SAXON PORTLAND CEMENT WORKS.

IN the early days of Portland cement the chalk and clay of the Thames and Medway were used almost exclusively for the manufacture of this material. Among other deposits utilised at later dates were the Cambridgeshire marls, but the product yielded gained a somewhat unenviable notoriety, which has only been dispelled within quite recent years. At the present time the cement produced from this source is fully equal, if not superior, to the best Thames and Medway brands. The Saxon Portland Cement Company, of Cambridge, have played an important part in demonstrating the suitability of the Cambridgeshire marl as a raw material, and since the completion of their works, some four or five years ago, the Saxon brand of cement has justly acquired a reputation for high quality and reliability, and, owing to the greatly increased demand, it has become necessary to build and equip additional works, which are described below. The main feature of the new works is that the machinery and plant have been arranged so that the product will pass through the entire process of manufacture without handling, thus ensuring a considerable economy in labour cost. Raw materials are conveyed by a cableway from the quarry to the drying-house, where there are two sets of double crushing rolls with a capacity of about 10 tons an hour. The material is next conveyed to two rotary drying-drums, supplied with hot gases from the kiln-house, the raw material passing from the lower end of the drums perfectly dry and ready for conveyance to a grinding-house furnished with a battery of seven Griffin mills, from which the powdered marl is elevated to mechanical mixers, and, after having passed the requisite chemical tests, is delivered into a silo holding some 200 to 300 tons. From this silo the powdered marl is elevated to hoppers over each of the five rotary kilns, being slightly damped so as to give the necessary "bind." Each rotary kiln consists of a slightly inclined steel cylinder, 60 ft. long and 6 ft. in diameter, mounted on rollers and slowly rotated by gearing. The powdered coal used for fuel is introduced into the kilns by a jet of hot air, issuing under a pressure of about 60 lb. per square inch. The marl mixture is delivered into the upper end of the cylinder, and, descending gradually, meets the incandescent gases from fuel fed into the cylinder from the opposite end. Becoming heated to redness as it approaches the centre of the cylinder, the material assumes the form of small round balls, which reach a nearly white heat in the lower third of the kiln, and finally emerge as clinker in balls about the size of a pea. The hot clinker is cooled by five rotary coolers, through which cold air is drawn by the coal-blast fans, and the heated air thus obtained is utilised for the kilns. In the clinker grinding-house a battery of nine Griffin mills reduces the clinker to the required degree of fineness, and from them the Portland cement issues as a marketable product. The new stores have a capacity of 10,000 to 15,000 tons, the lower part being in the form of a large hopper with sloping sides, arranged so that the cement can be discharged through openings into a tunnel, along which it is carried by a screw conveyor to the loading-house. The cement is here elevated into hoppers over two automatic weighing-machines, and at this point the sacks of cement are mechanically weighed in readiness for delivery. Railway sidings with a length of nearly one mile adjoin those parts of the works where materials are loaded and unloaded. We may add that the coal used in the rotary kilns is dropped from trucks on the sidings into a hopper, whence it is elevated to a 400-ton storage hopper, being conveyed thence to the dryer, which is fed by waste gases from the kilns. When the coal is perfectly dry it is automatically conveyed to the coal grinding-house, where it is reduced to an impalpable flour by a battery of three Griffin mills. The coal-dust is then conveyed and elevated to hoppers ready for delivery to the kilns. The new works of the Saxon Cement Company have been designed by the company's engineer after exhaustive examination of the latest methods adopted on the Continent and in America, and we are informed that, while no definitely ascertained

improvement has been omitted, great care has been taken to avoid the adoption of any insufficiently tested process or apparatus.

APPOINTMENT OF DISTRICT SURVEYORS.

THE following letter has been addressed to the London County Council on this subject :—

"*To the Chairman and Members of the London County Council.*

MY LORDS AND GENTLEMEN—

I am desired on behalf of the District Surveyors of London to address you on the question of certain proposals which have been submitted to you by your Building Act Committee involving very serious and important changes in the terms of the appointment of District Surveyors.

From the report of the Council's proceedings as printed, to which our attention has been drawn in the public Press, it would seem that the changes suggested would include :—

1. (*a*) A reduction in the number of districts from 57 to 33.
   (*b*) A consequential increase in the size of the districts.
   (*c*) A corresponding diminution in the number of qualified professional men acting with statutory authority.
   (*d*) A consequential devolution of a large portion of the work of supervision to a number of assistants.
2. A dual system of payment of District Surveyors
   (*a*) by salary in respect of the duties they perform under the London Building Act, 1894, and
   (*b*) by fees in respect of their duties under the Amendment Act of 1905.
3. The payment of building fees to the Council in respect of works executed under the Act of 1894 and to the District Surveyor in respect of works executed under the Act of 1905.

It will be manifest that changes such as these may easily lead to confusion and misunderstanding, and tend to increase the difficulties of efficient administration of the law.

The District Surveyors respectfully submit that the supervision of building operations has been carried out by highly-trained men—many of whom have occupied the highest positions in their profession—that the public has grown accustomed to pay professional fees for professional services, thus adequately rendered, and it is at least doubtful whether the suggested payment by salary will attract educated men of the first ability; from a professional point of view therefore the reflection suggests itself that changes in the direction indicated above may not be in the interests of the best and most efficient administration of the Building Laws.

The District Surveyors do not wish to suggest that there may not be points of detail in the present system which may with advantage be altered, and they desire me to add that they will be happy by conference or otherwise, to assist the Council in its efforts to improve a system which, in the opinion of many, has hitherto worked to the public advantage,—I am, my lords and gentlemen, yours faithfully,

THOMAS HENRY WATSON,
President of the District Surveyors' Association.
9, Conduit-street, W. January 8, 1906."

THE ARCHITECTURAL ASSOCIATION DISCUSSION SECTION.

THE fifth meeting was held at 18, Tufton-street, S.W., on Wednesday, January 3, Mr. E. W. M. Wonnacott in the chair.

Mr. Philip J. Turner, A.R.I.B.A., read the following paper on the "Houses of Parliament":—

"My principal reason in selecting the "Houses of Parliament" as the subject of my paper was the opportunity afforded me by Mr. Charles E. Barry (the grandson of the architect of Westminster Palace) of bringing such interesting drawings as you see here this evening.

In dealing first of all with the site and the old Houses of Parliament it should be remembered that for many hundred years Westminster, from the time of the Conqueror, appears to have been the Metropolitan seat of Government, the principal palace of the King, and the Court of Judicature of the kingdom. The ancient Royal Palace of Westminster covered, in fact, the ground now occupied by the two large courts known as "Old Palace" and "New Palace" yards. William Rufus erected Westminster Hall in 1097 as the nucleus of an extensive Palace he proposed building, which, though destroyed by fire, was almost entirely rebuilt by Richard II. in 1394-97. King Stephen founded St. Stephen's Chapel, which was rebuilt in 1364, and, though it was destroyed in the fire of 1834, its memory is still retained, the name St. Stephen being synonymous for the Houses of Parliament themselves. This chapel seems to have been a perfect and magnificent specimen of the style in which it was built. The chapel was fitted up for the House of Commons in the reign of Edward VI. After the ancient Palace had been almost wholly destroyed by fire in 1512, Henry VIII., in 1530, bought Whitehall, and the Palace from this time became deserted by Royalty. All that now remains of the old Palace is the great hall and the crypt under the Chapel of St. Stephen.

For many years previous to the destruction of the old Houses of Parliament by fire, various plans had been suggested for enlarging and improving the buildings, and negotiations for building a new House of Commons were actually in progress in 1834. Previously, in 1739, William Kent had submitted plans for new Houses of Parliament and Law Courts. The general idea of the two Houses separated by a central vestibule in this scheme resembles that adopted in the present buildings. The elevations remind one very much of the Horse Guards. Sir John Soane's designs, dated 1794 and 1769, for various improvements to the old Houses are to be seen in the Soane Museum. After the fire of 1834 Sir Robert Smirke reroofed and refitted the Painted Chamber as a temporary House of Lords, the Commons occupying the Court of Requests. Instructions were also given to him to prepare plans for a new building, but this was finally abandoned for an open competition. The claims of the Gothic style were now in the ascendant, and when, in June, 1835, the terms of the competition were published, the instructions to competitors stated that the style to be adopted was to be "Gothic or Elizabethan." Four premiums of 500*l.* each were promised, and six months allowed for preparing designs—surely far too short a time for such an important building. Ninety-seven designs were sent in, and the Commissioners' Report, dated February 29, 1836, recommends that the successful architect's drawings "shall be submitted from time to time to competent judges of their effect, lest from over-confidence, negligence, or inattention in the execution of the work we fail to obtain the result to which our just expectations has been raised."

A good definition of what we should look for in the design of a Parliament House is given by Mr. H. H. Statham in his book on "Modern Architecture." He says :—"A Legislative Palace should be the symbol of the greatness of the nation in regard to wealth, artistic taste, and political power." "The character of the architectural design should have something distinctly and recognisably national about it—something which could not well be found on any other soil."

The general idea of the plan, a large central hall connecting the two chambers, is well known, and seems to have been adopted by almost every national Parliament House since built. In studying the accepted design it must be remembered that the architect had not an absolutely free site, but was governed by the existence of Westminster Hall and the Law Courts and the Crypt of St. Stephen's Chapel. The lowness of site was a great drawback, and the erection of a great terrace, as at Somerset House, was proposed, but never pressed, owing to the great cost involved and other drawbacks. The site is irregular, being wedge-shaped on plan, and the existence of Westminster Hall and the Law Courts made a continuous elevation on the land side impossible. Mr. Barry, in the competition perspective made in 1836, intended that the Courts should be removed, and continues his design right up to the north-west corner of the site, thus enclosing New Palace-yard.

There is little doubt that Gothic and Perpendicular Gothic was the right style to adopt, rather than the alternative, viz., Elizabethan. As Westminster Hall would either ruin any design or make a special feature of it, Mr. Barry decided to make the hall his great public approach, and by building St. Stephen's Hall over the old chapel crypt access was obtained to the centre of the site. The principal floor of the Palace is all on one level, with not a single step except to Westminster Hall and the altered lobbies of the House of Commons.

The plan has been described as a Classic design with Gothic detail, and many, including Mr. Pugin, would have preferred a more picturesque treatment, but the architect always contended "that symmetry and regularity were essential to unity and grandeur." The spire, 266 ft. high, over the central hall, was not part of the original design, but added to meet the requirements of Dr. Reid's ventilating schemes. St. Stephen's porch is also an addition, made by Mr. Barry on being appointed to carry out the work. The central hall was intended to be much higher than it now is, but was lowered in execution to meet Dr. Reid's requirements in his ventilation scheme. The House of Lords was lavished with decoration, it being not merely a place of business, but also the Court of the sovereign. In this decoration Mr. Welby Pugin took an important part. The size, shape, and acoustic properties of the House of Commons have always given rise to considerable criticism. There is only a small average attendance of about 300 members, and no doubt this and the advice of the authorities of the House led to the chamber being made of the smallest possible size. The requirements of Dr. Reid for his schemes of ventilation entailed alterations to both plan and design. Dr. Reid's appointment being independent of the architect complicated matters considerably. His scheme never met with Mr. Barry's approval, and were always the subject of repeated controversy between them until the cessation of Dr. Reid's connexion with the new Palace.

In comparing the original design of the river front with that executed a different treatment is discovered. Some means being required for breaking up the monotony and comparative bareness of this long front, Mr. Barry decided to further raise the centre portion, to make towers of the flanking masses, and to introduce visible roofs and turrets. The windows of the two principal stories were formerly set in arched recesses, but these were abolished, together with the pointed heads of the windows. The general character of the front to Old Palace-yard is the same as the river front, except that the alternate bays are advanced and the front is divided into three floors instead of two above the basement.

The great Victoria Tower underwent various alterations. Originally designed 100 ft. square, it has been reduced to 70 ft. The present fine arches, 53 ft. to the apex, replace an entrance of quite moderate dimensions. The numerous studies Mr. Barry made for this tower show that it must have caused him enormous trouble. The tower is 336 ft. high to the top of the pinnacles, and over 400 ft. to the top of the flagstaff. The flagstaff is of rolled sheet-iron, bolted together, and is 110 ft. long and 3 ft. in diameter at the base. The design of the Clock Tower must have given even more trouble, as drawing after drawing were made and rejected by the architect. The clock in this case had to be the prominent feature on the topmost story and of immense size, and the idea carried out of projecting the clock story beyond the body of the tower was at last adopted.

The elevations, in a general way, have been criticised as being overloaded with ornament and small detail, but Sir Charles Barry's contention was that detail could not be excessive in amount if continued consistently in every part of a building.

The whole Palace covers a site of about 8 acres, the river front being 840 ft. in length. The House of Peers is a double cube, being 90 ft. long and 45 ft. high and broad; the House of Commons is 75 ft. long by 45 ft. wide. The work of the river wall was begun in 1837, and from the outset of the work unforeseen troubles were met and expenses incurred. The Royal Commission, appointed to select the stone to be used, reported that Bolsover Moor should be adopted. Unfortunately, it afterwards appeared that the quarries could not meet the demand, and a limestone from North Anstone was used, which has not proved itself able to resist the London atmosphere satisfactorily. The interior walls are built with Cowley bricks and faced with Caen stone. An iron and brick construction was adopted in the floors; the roofs were constructed and roofed with galvanised iron, so that the entire building is of fire-resisting material.

The first stone was laid on April 27, 1840, and the works were rapidly proceeded with

under the contractors, Messrs. Grissell & Peto. The architect seems to have been hampered from the beginning, and in 1844 a Commission of Inquiry was appointed, in which the Duke of Newcastle, then First Commissioner of Works, urged that Mr. Barry should be allowed a freer hand. Before the Fine Arts Commission of 1841 Mr. Barry laid his views regarding the best way of encouraging painting and sculpture in connexion with the new building. Briefly, he recommended the adoption of decorative historical paintings, the use of British marbles, encaustic tiles for paving, and that the windows be doubly glazed with stained glass. Westminster Hall was to be used as the depository of naval and military relics of former wars. A suggestion made by Sir Charles Barry was of forming a "campo santo" between the hall and the proposed additional buildings enclosing New Palace-yard.

Between 8,000 and 9,000 original drawings and models were prepared for the works, in the preparation of which Mr. Welby Pugin ably seconded Mr. Barry. The former was appointed superintendent of the wood-carving; he also supervised the execution of the woodwork, stained glass, and tiles. The head carver was Mr. John Thomas. The scaffolding for both towers was designed by the architect, and dispensed with the use of external scaffolding. In February, 1847, the House of Peers was occupied for the first time, and in 1852 the Royal approach was finished, and finally the towers, last of all being the Victoria Tower, incomplete at the architect's death in 1860. The original estimate was 707,104*l*., the amount expended being nearly two millions. The main item in this increased cost was the cost of the fittings, decoration, and sculpture required by the Fine Arts Commission. The cost per foot cube is about 2s. 6d. Various schemes have been suggested for providing extra accommodation, notably a fine plan submitted by Mr. Barry in 1855 for extending the buildings westward along New Palace-yard and southward to St. Stephen's Porch, thus enclosing the whole square. This would have given a fine public entrance at the north-west angle of the site. Mr. Pearson's work in the restoration of the hall was carried out in Kelton stone, which seems to have stood well. Of the various suggestions made for enlarging the House of Commons, that of lateral extension, proposed by the late Charles Barry in 1893, seems to be by far the best."

The paper was illustrated by original drawings, kindly lent by Mr. C. E. Barry, and by lantern slides.

Mr. R. H. Weymouth, in opening the discussion, pointed out how much better the interior detail was than the interior detail. The terrace, though a fine feature, he thought inferior to a water frontage. The latter was warmly discussed by other speakers, as also the justice of the criticism that it was a classic plan with Gothic detail. Mr. Fyfe suggested that all great buildings should have a museum of drawings and models open to the public.

Mr. H. H. Statham, in summing up the discussion as Special Visitor, said that the position of the Houses of Parliament close to the river, in spite of the low site, was believed partly selected for political reasons, and on the advice of the Duke of Wellington, who thought that the House of Legislature should never be so placed that it could, in any time of tumult, be surrounded on all sides by a mob. The existence of the building was one illustration of the advantage of architectural competition for national buildings. According to his recollection, the choice of style for the competitors was Tudor or Elizabethan, which would be quite right, seeing that these two phases of architecture were both distinctly English and national. In regard to the question of symmetry, Fergusson held that the building should have two symmetrical towers, two Victoria Towers as it were, instead of two of different design; but he did not agree with that, as the two towers were for perfectly different objects, one for state, the other for the practical purpose of carrying a clock, they were therefore rightly treated differently. Their position at the two extremities of the building was a good point, as it showed the extent of the plan from a distance; and the centre spire, marking the centre octagon, was one of the happiest of afterthoughts, and in this case the architect might be considered to be indebted to the ventilating engineer for the requirements which led to it. He had not heard of any new scheme of ventilation being suggested recently, though there might have been some improvements in detail. He had gone all through the ventilation system of the House some years ago, and believed it was on the whole one of the best ventilated buildings in existence, and that complaints to the contrary effect only emanated from a certain class of members of Parliament who would never be contented with anything; but he thought the admission of the air through the floor was a bad point, as it tended to carry up dust from the floor with it. Barry's objection to bringing forward the centre of the façade of a great building was a general principle with him, and the objection to it was remarkably illustrated at Versailles, where the centre of the garden front was brought out a long way in front of the main line of the building, with the consequence that from no point of view could the whole extent of the façade be taken in. Barry's proposal to carry the architectural design of the building round Westminster Hall and enclosing Palace-yard, thus making the architectural treatment homogeneous, was he thought entirely right; the west side of Westminster Hall had been entirely destroyed externally, and the restoration that had been made was valueless because only conjectural. He could not agree with Mr. Weymouth that any more irregular plan was desirable to be in accordance with Gothic feeling; the existing plan was really the essence of the design, and the finest thing about it; but he agreed that the river front would have had a finer effect had it risen straight from the water without the intervention of the terrace, though the terrace no doubt was a great practical convenience. He felt quite sure that no spire had ever been intended for the Victoria Tower, and it certainly would be no improvement; the tower was quite complete as it stood. What Mr. Weymouth and Mr. Fyfe had said about the interest of the drawings of such a building being available for inspection was very true; the best suggestion of the two, he thought, was Mr. Fyfe's of having a museum-room of drawings and models in the building itself. The small area of the actual "Houses" in the plan of the building was no doubt remarkable; but it was a practical question of keeping the Chambers small enough for a speaker to be heard without undue effort; and after all, the proportions in the plan represented Parliamentary life, for every hard-working member would say that it was not so much attendance in the House as work in the Committee-rooms which formed the real labour of Parliamentary life. He differed entirely from the suggestion that the Victoria Tower would be improved by another story; he considered it a perfectly proportioned tower. He was one of the greatest admirers of the architectural aspect of the Houses of Parliament, having for many years lived close to them, and having found the varying aspects of the two great towers under varying conditions of light and atmosphere, a constant source of enjoyment. He might mention that one very effective view of the Victoria Tower was that which was to be seen from the "Little Cloister" of Westminster Abbey. He considered that Mr. Turner had made a very good summary, within necessarily brief limits, of a great subject.

On the instance of the Chairman, votes of thanks were passed to the author, to Mr. C. E. Barry for his kind loan of drawings, and to Mr. Statham for his attendance amidst the pressure of business.

ARCHITECTURAL SOCIETIES.

BIRMINGHAM ARCHITECTURAL ASSOCIATION.—At the general meeting of the Birmingham Architectural Association, held on Friday last week, the Vice-President, Mr. J. L. Ball, in the chair, Mr. Mowbray Green, A.R.I.B.A., read a paper on the "Architecture of Bath of the XVIIIth Century," which was illustrated with a large number of lantern slides.

PROPOSED CLUBHOUSE, OGMORE DOWN.—Plans for a new clubhouse for the Ogmore Down Golf Club have been prepared by Messrs. Linton & Barker, architects, of Newport. The building will consist of one story, with an attic floor above, and the work will be carried out in stone.

ENGINEERING SOCIETIES.

THE JUNIOR INSTITUTION OF ENGINEERS.—With the permission of Mr. Vincent W. Hill, General Manager of the South-Eastern and Chatham Railway, a visit of this Institution took place on Saturday afternoon, the 6th inst., for the inspection of the methods adopted in supporting the end of the Charing Cross Station roof after the recent disaster, and of the operations which are now in progress and which are proceeding night and day for the removal of the entire structure. Upwards of 200 attended. Mr. G. Ellson, of the Engineer's Department, and Mr. J. W. Nisbet, who is in charge of the work for Messrs. John Aird & Sons, fully explained all the features of interest to be observed, including the steel ropes connecting the feet of the three end principals to relieve the strain on the tie-rods, the two wooden towers and connecting timbering and the travelling stage now in course of construction for taking down the entire roof. The members also had the opportunity of ascending the timber towers, and seeing closely how the principals are supported at seven points, and how the removal of portions of the roof is being accomplished.

THE INSTITUTION OF CIVIL ENGINEERS.—At the ordinary meeting on Tuesday, the 9th inst., Sir Alexander Binnie, President, in the chair, two papers were read—namely, "The Elimination of Storm-water from Sewerage Systems," by Mr. D. E. Lloyd-Davies, Assoc.M.Inst.C.E., and "The Elimination of Suspended Solids and Colloidal Matters from Sewage," by Lieut.-Colonel A. S. Jones, V.C., M.Inst.C.E., and Mr. W. O. Travis.

The scope of the first paper was limited to a description of experiments and investigations into the subject of the discharge of storm-water from populous districts. A formula was framed for the estimation of storm-water discharge likely to obtain in underground channels from various defined areas, and this formula was proved by means of tables and diagrams compiled from experiments in the sewers of Birmingham, extending over twelve months, together with figures obtained from various other sources. An endeavour has been made to prove the accuracy of the various instruments used for the experiments, and the validity of the calculations adopted. The paper concluded with a description of a new type of storm-water overflow chamber constructed in 1904 in Birmingham. The importance of constructing bell-mouths on outlets from manholes in surface-water culverts, and of making the connexion above the highest flood-water level when the velocity in the main exceeds that of the affluent, was emphasised.

In the second paper attention was drawn to the fact that the solids in suspension in sewage, and the sludge resulting therefrom, have monopolised general attention, to the entire exclusion of the colloids and the sludge to which they give rise. The presence of colloidal substances in sewage was established, and it was shown that, though variable in amount in different sewages, and in the same sewage at different times, they may be safely estimated as at least one-half of the organic constituents of settled or filtered sewage. The importance to be attached thereto, however, was demonstrated to be not so much a question of quantity, as of behaviour in, and method of elimination from sewage. It was shown that ordinary tank operations, though they will cause the deposition of the suspended solids, and the formation of that sludge which has always been regarded as the crux of the sewage-disposal problem, will have practically no influence upon the colloids, which require to be brought into intimate or prolonged contact with material upon which they become particulate, forming a hitherto unrecognised and consequently disregarded sludge. Observations and experiments were adduced to substantiate the contention that sewage is clarified by the physical operations—deposition of suspended solids, and abstraction of colloid and other substances as solid matters from solution and pseudo-solution—and that the bacterial influence is secondary and subservient thereto. So that whether sewage be discharged into the sea, or a river, or on to natural or artificial filtration areas it is clarified in virtue of the elimination of solids, and not by reason of the biological character of the operation

which has attended the liquid in its passage. The secondary nature of the bacterial action was evidenced by the fact that the organisms are occupied in dealing with the solid matters which have been separated from the sewage, and which therefore are, in so far as the original liquid is concerned, out of consideration. Its subserviency was illustrated by the existence of large accumulations which necessitate removal, proving that the ratio of deposition is in excess of bacterial resolution. The accumulated solids were demonstrated to be much greater in amount than is commonly supposed, and to have, in all parts of the treatment area, the characteristics of, in fact, to be identical with, ordinary sludge. These statements were substantiated by the results of nearly seven years' work in connexion with the triple contact beds at Hampton-on-Thames. These triple contact beds were adduced as a striking object lesson, not only as regards the retention of organic solids, but also as an example of the protracted, if not inadequate, character of the bacterial operation. In addition, they point to the necessity for the greater protection of artificial filtration areas from the intrusion of depositable matters. In land treatment this necessity was demonstrated to be not so manifest, and certain data being assumed, tanks, etc., which have had a long practical trial are described and illustrated. On the other hand, where artificial processes are adopted, the more perfect elimination of suspended solids and colloidal matters becomes imperative, and means for ensuring such removal must be provided. A means to this end was described, and illustrations of the hydrolytic tank system, with the results of ten months' working, were given.

It was announced that forty-eight Associate Members had been transferred to the class of members—viz., Messrs. C. W. Anderson, J. T. N. Anderson, G. S. B. Andrews, R. J. Angel, Eduardo Argenti, Herbert Ashley, C. J. Batley, Harry Becher, C. E. Bremner, C. J. Brown, James Brown, F. A. Campion, J. P. Copland, W. R. Copland, jun., H. G. Coventry, F. J. Dawson, W. B. Dawson, A. L. Dickie, J. R. Dixon, R. J. Durley, G. E. Fedden, F. C. Fowle, J. W. F. Gardner, David Gravell, T. A. Hall, H. J. S. Heather, C. Q. Henriques, D. W. Herbert, Arthur Hill, Frank Howarth, J. L. Jeken, W. O. Leitch, jun., F. H. Longhurst, J. A. McPherson, D. E. Marsh, Frank Massie, H. J. Morton, James Munce, H. E. Oakley, Hugh Oldham, F. G. Royal-Dawson, W. B. Shaw, A. M. Tippett, C. B. Trye, William Waddell, L. A. B. Wade, J. E. Willcox, C. B. Williams.

It was also reported that twenty candidates had been admitted as Students—viz., J. P. R. T. B. Bacon-Phillips (London), M. A. Beg (Manchester), W. D. Donkin (New South Wales), E. P. Hill (Manchester), A. L. Lawrence, B.A. (Cantab.) (London), W. D. McLaren (Glasgow), A. B. Marshall (Rochdale), K. Peddie (Coopers Hill), J. E. Pullen (Wolverhampton), M. K. Rice-Oxley (London), R. A. Routh (Coopers Hill), S. A. Sayer (London), W. Sharp (Coopers Hill), D. Shepherd (Edinburgh), S. T. Stubbs (London), A. J. Venables (London), H. D. Wheeler (Norwich), A. Williams (Wrexham), C. M. Wilson (London), F. W. Wilson (Malvern Wells).

The monthly ballot resulted in the election of three Members—viz., C. E. Dupois, M.A. (Cantab.) (Sudan), R. F. W. Hodge (Howdon-on-Tyne), C. Jones (London); and of twenty-eight Associate Members—viz., D. Anderson, B.Sc. (St. Andrews) (London), H. Anderson, Stud.Inst.C.E. (Bombay), J. B. Benjamin (Lagos), J. C. Collett Stud.Inst.C.E. (Sudan), W. W. Coster (Cape Town), D. D. Daruvala, L.C.E. (Bombay) (Bombay), J. A. Davidson (Cape Town), T. M. Davies, B.A. (Cantab.) (London), J. L. Dixon, Stud.Inst.C.E. (London), W. E. Fox, B.E. (Royal) (Eastleigh, Hampshire), A. H. Gibson, B.Sc. (Victoria) (Sowerby Bridge), J. M. Granger (Cape Town), W. F. Hole, B.E. (Sydney) (Johannesburg), E. E. F. Homer (Swanage), W. J. A. E. Horne (Cape Town), F. W. R. Hurt (Transvaal), J. H. Inglis (Cape Town), H. W. Minnitt (Devonport), L. Morgan (Cape Town), A. E. Paul, B.A. (Cantab.), Stud.Inst.C.E. (London), O. B. Rattenbury, Stud.Inst.C.E. (Malta), E. A. Salt, Stud.Inst.C.E. (London), P. A. Thompson, B.A. (Cantab.) (Penarth), A. F. Tredcroft, Stud.Inst.C.E. (Seaforth), S. G. Turner, Stud.Inst.C.E. (London), A. V. Venables, Stud.Inst.C.E. (Bengal), H. S. Watson, Stud.Inst.C.E. (London), A. Whittington-Cooper, Stud.Inst.C.E. (London).

COMPETITIONS.

OFFICES FOR HOLBORN BOROUGH COUNCIL.—The Establishment Committee of Holborn Borough Council reported on Monday having gone into the question of the best course to adopt to obtain suitable preliminary plans for the new offices of the Council. The Council is in possession of a certain site, but it is possible that an architect, having the requirements of the municipal authority before him, may be able to utilise a portion of this only and leave a residue for sale. The Committee was of opinion that the competition should be limited, and had resolved, subject to the usual sanction, (1) that no more than six architects be invited to submit preliminary plans for the Council offices, and that they be paid an honorarium of twenty guineas each; (2) that when the plans are ready the Committee will consider them and submit a further proposition on the matter; (3) that it be an instruction to the competing architects to give attention to the economical use of the land.

LIBRARY, PLEASLEY.—Mr. Ernest R. Sutton, F.R.I.B.A., of Nottingham, has been appointed to act as assessor of the competitive plans which architects have been asked to send in for the proposed new library buildings at Pleasley.

Books.

The London Building Acts, 1894 to 1905. Edited by BERNARD DICKSEE, F.R.I.B.A. Second Edition, revised and enlarged. (London: Edward Stanford. 1906.)

ALL prudent architects practising in London may, as regards their relation with the building laws, be divided into three groups. First, those who bring with them to their drawing-boards a King's Printers' copy of the statute and their own common-sense; next (and this group is becoming larger in proportion as the multiplicity and complexity of regulations increase), those who prefer to consult a specialist; and, thirdly, there is that majority of professional men who, relying wholly neither on their unaided though robust common-sense nor on information obtained in consultation, elect to keep for reference a well-annotated edition of the various Acts with a sufficiently comprehensive index. Imprudent practitioners, but these seldom survive, are they who let their artistic fancies have free course until a little "notice of irregularity" in an official envelope razes to the ground their castle in the air.

The aspirant to any one of the three first-mentioned groups should have, for the first class, a more than ordinarily clear understanding of legal phraseology and a more than common common-sense; for the second class he must know the best man to advise him, that is to say, one who has made a special study of the subject; whilst for the third, one good book with its matter well arranged, with its comments not too long but really illuminating, and its table of decided cases concisely but precisely "digested," one such book is worth half a dozen handbooks designed perhaps primarily to air some particular view or to criticise some regulation which has already been placed on the Statute-book, and is therefore beyond effective criticism.

It is our pleasant duty to record our opinion that Mr. Dicksee's book possesses all those qualities which the majority of architects will find desirable in order that they may be aided in their obligatory studies of the recently amended Building Acts.

Our readers will not need to be informed of the scope and incidence of the new Act, which has already been analysed in these columns; it will be sufficient if we proceed to point out in detail some of the points in the work under notice which seem to call for special commendation, and at the same time to make one or two suggestions as to possible improvements which the Editor may consider when preparing the next edition.

As regards the old Act, Mr. Dicksee has in his notes preserved that character which made the first edition of this book deservedly popular among professional men and others. The notes are concise, the cross-references are adequate, and the decided cases have been brought up to date so as to include the decisions in the following important cases, amongst others:—Leadbitter *v.* Marylebone Borough Council (1904), Horner *v.* Franklin and another (1905), and the case which recently attracted some attention—known as the Fulham-road Building Line Case—*in re* London Building Act, 1894, and the London County Council (1904).

In his treatment of the new London Building Acts (Amendment) Act Mr. Dicksee has also been commendably concise, nor has he fallen under the temptation, in the necessary absence of decided cases, to overburden the text with notes, the vague uncertainty of which is scarcely concealed by the question-begging phrase, "It is submitted that . . ."

There is however plenty of definite information as to rules and regulations cognate to the Building Acts; for example, we have here the regulations as to procedure made by the Tribunal of Appeal, a reprint of those sections of the Factory and Workshop Act, 1901, which are pertinent to building matters, the requirements of the London County Council as regards means of escape in case of fire under that Act, a reprint of the Public Authorities Protection Act, 1893, and the important decision of Mr. Justice Farwell in Sharpington *v.* Fulham Guardians (1904) is noted.

We think the usefulness of the work as a book of reference would be increased if Mr. Dicksee could see his way to include the by-laws as to water-closets under the Public Health (London) Act, 1891, and the drainage by-laws under the Metropolis Management Act, 1855; we also think that the thirty sections of the Arbitration Act, 1889, might well find a place here, as this Act is needed with reference not only to Part VIII. of the Act of 1894 (Rights of Building and Adjoining Owners), but also to Part IX. (Dangerous and Neglected Structures).

We have said enough to indicate our appreciation of the practical usefulness of Mr. Dicksee's book; now for one word of criticism.

To punctuate an Act of Parliament may or may not be commendable, but why it should be thought necessary to indicate by inclusion within square brackets [ ] such portions of the Acts as were not contained in the former and superseded Acts we altogether fail to understand. To historians of the law it may be interesting enough, but to most of Mr. Dicksee's readers it can, we imagine, be a matter of small moment to know that subsect. 4 of sect. 105 of the Act of 1894 was not included in the Metropolitan Building Act of 1855. Moreover, this bracketing where it occurs in the middle of a clause is a positive stumbling block, for example in the schedule of materials deemed to be fire-resisting we read:—

In the King's Printers' Copy:—	In Mr. Dicksee's annotated edition:—
Flagstones when used for floors over arches but such flagstones not to be exposed on the underside and not supported at the ends only.	Flagstones when used for floors over arches, but [such flagstones] not [to be] exposed on the underside, and not supported at the ends only.

There may be some who will be gratified to know that the words "such flagstones" and "to be" did not appear in the Act of 1894, but for ourselves we confess that such scraps of verbal archæology are not, in our opinion, worth chronicling. One misprint on page 112, where the case Leadbitter *v.* Marylebone Borough Council should be dated "1904," not "1894," and the omission of a reference in sect. 90 subsect. (4) to the subsequent case in the Court of Appeal "Marylebone Borough Council *v.* Leadbitter (1905)," completes our little tale of shortcomings. We can, in conclusion, congratulate Mr. Dicksee on the prompt appearance of his handbook, the successful production of which within four months of the passing of the Act of 1905 reflects great credit both on editor and publisher.

BOOKS RECEIVED.

RATING OF LAND VALUES. By Arthur Wilson Fox, C.B. (P. S. King & Son. 3s. 6d.)

THE HISTORY OF AMERICAN PAINTING. By Samuel Isham. (Macmillan & Co.)

LOCKWOOD'S BUILDER'S AND CONTRACTOR'S PRICE-BOOK: 1906. (Crosby Lockwood & Son. 4s.)

TRADE CATALOGUES.

THE Electro Motor and Dynamo Company, London and Manchester, send us their electrical hoisting catalogue, which contains particulars and illustrations of specialties for various types of hoisting machinery. Among the direct motor-driven gears, two simple and neatly-designed winches are shown. One of these is of the friction type, with raw hide motor pinion and machine-cut spur wheel and friction wheel with turned grooves, driven by a completely enclosed motor and mounted on a self-contained bedplate. This machine is made in four sizes to lift weights up to 10 cwt., at a speed of 110 ft. per minute. Another is a spur-geared winch, specially designed for warehouse cranes, with raw hide motor pinion, machine-cut gear with guards, and an enclosed slow-speed motor, the whole being mounted upon a cast-iron bedplate in the smaller sizes, and upon a riveted steel base in the larger sizes. This machine is made in fourteen sizes, the maximum load being 3 tons and the speed of 200 ft. per minute. Near the middle of the catalogue several very compact patterns of gears are illustrated, these being suitable for goods and passenger lifts of all kinds. A good assortment of controllers for cranes, hoists, and lifts is offered by the same firm, who also give particulars of automatic lift gate locks, magnetic brakes, electric pulley-blocks, and travelling hoists and crabs. The catalogue is a useful guide to the selection of electric hoisting apparatus such as is very generally employed in buildings of all kinds, and in the execution of building and other contracts.

We have received from the Simplex Steel Conduit Company, Ltd., of Norfolk-street, Strand, a small pocket list giving details of their well-known system of conduits for electric wiring, both of the ordinary and the screwed type. We notice that several novelties are described. In particular, we may mention an ironclad type of water-tight wall plug, which seems to us to be well adapted for workshop or outdoor use. The catalogue is of a very convenient size.

Messrs. Gibbons Brothers, of Dibdale Works, Dudley, send us their catalogue of band conveyors for the local transport of building materials, minerals, grain, and other substances. Although containing a good deal of useful information, this catalogue is not arranged so well as could be desired. For instance, careful study and constructive reasoning are necessary to reveal the fact that the firm make four types of conveyor, three with deep trough, shallow trough, and flat bands respectively, and the fourth a "slat" conveyor, in which the band is replaced by strips of wood fixed to chains or india-rubber bands, for the transport of boxes, barrels, sacks, and other bulky packages or materials. Illustrations and prices are given of all essential parts of conveyors and accessories, and some photographic views depicting representative installations. The value of conveying plant is suggested very clearly on p. 5 by a table stating the capacities of different bands in tons per hour, when run at the speeds most suitable for the materials carried.

Correspondence.

RE STANDARDISING OF QUANTITIES.

SIR,—If you have space for the continuation of this discussion, I would like to point out that in my opinion it is not so much a standard bill that is required, but, as put forward by Mr. Pease, surveyors should be agreed as to what labours should be measured and the mode of measurement; especially should they be unanimous on the measuring of labours of stonework, for nearly everyone has his own particular method with this work, and I venture to say that many could not efficiently take these off, and even when taken off very many builders do not trouble to price them in detail.

Providing that a standard bill were required, it must needs be an exceedingly bulky one if it is to contain all that would be necessary on any job of every nature; and even then many of the old school with established practices would not turn from their present methods.

One point in favour of such a bill would be that provincial surveyors and those adopting the Northern practice might prepare their bills in a similar manner to that adopted by their London colleagues, as this is where the great dissimilarity occurs, for every day terms in London are practically unknown by many in the provinces.

Assuming a provincial job is done by a London surveyor, it is more difficult for some of the local builders to estimate for, and therefore a speculative price is the result on certain items, of which the descriptions, etc., vary from local customs; again, several items are given in Northern practice which are unknown in London.

One great drawback to a standard bill would be that it would considerably simplify our work, thereby causing far more competition, and would enable anyone with an elementary knowledge to prepare a set of bills which would on the face look correct, but if gone into would be found hopelessly wanting.

As regards the statement made by Mr. Pease that "surveyors' fees are so reduced," they have no one to blame but themselves for this unhappy state, for why cannot they agree amongst themselves to accept only the recognised fee? This would then place all on an equality, instead of the present manner, which is fast turning the profession into a pure business, when, as is often the case, the one who will do the work at the lowest rate (whether he is competent or not) gets the job.

If this could be brought about, it would enable them to employ competent assistants, instead of as now, at any rate in the Midlands, having a large part of the work done by juniors, some of whom do not understand the most elementary terms.

I heard the other day of a man over thirty years of age offering his services as a thoroughly competent draughtsman, experienced in quantities and details, etc., for the princely salary of 2*l.* per week. What may one expect for that amount?

I believe it has been discussed by the Quantity Surveyors' Association, and that it is their aim, if possible, to make their members accept only the recognised fee. STEWART G. MUMBY.

Withington, Manchester.

THE "PARIS IN LONDON" SCHEME.

SIR,—I notice that in your issue of the 30th ult. you refer to me on page 710 as joint architect for a "Paris in London" scheme. Will you allow me to correct this? Mr. G. D. Martin, of 3, Pall Mall East, is the joint architect with the author, M. Gérard, whereas I am only acting in conjunction with Mr. Martin. DETMAR BLOW.

The Student's Column.

SOME MATHEMATICAL METHODS AND USEFUL DATA FOR ARCHITECTS.—II.

Mathematical and Technical Symbols.

IT is convenient to draw a distinction between *signs* and *symbols*, and to regard the former as marks pointing, where necessary, to the alphabetical characters constituting the latter.

Some mathematical symbols are employed in accordance with clearly-understood rules, and a few have universally accepted meanings.

For instance, in algebra the first letters of the alphabet, a, b, c, and others, are generally used to denote constants or coefficients, and the last three letters, x, y, z, to symbolise unknown quantities. As examples of symbols having invariable meanings or values, we may mention g = gravity or the velocity of a falling body, and π = the ratio of circumference to the diameter of a circle.

Unfortunately, writers of mathematical books do not always keep to generally-understood symbols. As an example, we may point to the use of M to denote moment of resistance as well as bending moment, thus losing the distinction between these equivalent, but not similar, moments. If M = bending moment and R = moment of resistance, then the equation M = R conveys a meaning. But it is absurd to have M = M, because the intended meaning is not thereby conveyed. Instead of R, some writers use μ to indicate moment of resistance, and there is no objection to this. Some confusion is caused, however, when μ is employed to denote bending moment and also Poisson's ratio. For, if M = R = μ the last of these symbols cannot correctly be used for Poisson's ratio, or the ratio of longitudinal extension to lateral contraction, as this is quite a different thing.

We need not refer at length to the perplexing inconsistencies of mathematical nomenclature. Some of them arise out of the fact that the letters of the alphabets commonly adopted are not sufficiently numerous to provide distinctive symbols for the ever-increasing needs of modern science. Writers pick out characters to suit themselves, and seem to care very little for the practice of their contemporaries. Consequently we have now arrived at a stage when standardisation is urgently wanted, and not merely national, but international standardisation.

In the following lists we have included symbols employed in those branches of mathematics of direct interest to architects. It would have been easy to extend the category very materially, but the additional symbols so collected would have been of little practical use, except for the purpose of showing the glorious state of confusion which is sufficiently demonstrated by the tabulation of the more generally used symbols.

The subjoined lists include, in addition to purely mathematical factors, various symbols and abbreviations employed in different branches of technical work. These are intended for the convenience of readers who are not familiar with the precise meaning of expressions such as "A.C. generator," "I.W.G.," "B.Th.U.," "r.p.m.," and others frequently to be found without explanation in engineering papers and books.

(1) *General.*

a = abscissa, angle, area, axis, constant.
b = breadth, coefficient, constant, known quantity, ordinate.
c = coefficient, constant, known quantity, conductivity, correction.
cg = centre of gravity.
d = deflection, density, depth, diameter, differential, discharge, distance, known quantity.
e = base of Napierian natural or hyperbolic logarithms, coefficient, known quantity.
f = force, function, unit stress, constant or coefficient, known quantity.
g = gravity; the velocity of falling bodies, which in British units = 32·088, and in Metric units = 9·78024.
h = height, head.
i = inclination or slope.
k = coefficient, constant, reciprocal of the modulus of a logarithmic system.
l = length.
m = mass, modulus, modulus of common logarithms, moment.
n = number, one or more functions.
o = zero.
p = parameter, perimeter, unit pressure.
q = quantity, unit pressure.
r = radius, ratio.
s = sectional area, surface.
t = temperature, difference of temperature, thickness.
u = deflection, length.
v = velocity, volume.
w = weight or load.
x = abscissa, unknown quantity.
y = ordinate, unknown quantity.
z = surface or area, unknown quantity.

A = Angle, Area, Axis.
B = Barometric Height, Breadth.
C = Circumference, a Constant, or Coefficient, Curvature.
D = Density, Depth, Diameter. Differential Coefficient (sometimes written d_1), Discharge, Distance.
E = Elasticity, Coefficient or Modulus of Elasticity, Energy.
F = Factor, Force, Function.
G = Gravity (centre of).
H = Head, Height.
I = Inertia, Moment of Inertia.
K = Constant or Coefficient.
L = Length, Loss.
M = Mass, Modulus, Moment, Bending Moment.
N = Number.
O = Zero.
P = Parameter, Perimeter, Power, Pressure, Force.
Q = Quantity, Force.
R = Radius, Reaction, Refraction, Resilience, Resistance, Moment of Resistance, Resultant of any System of Forces, Revolutions.
S = Sectional area, Space, Stress, Surface.
$\int$ = the sign of integration, a modified form of S, standing for sum, the integral being the sum of the differentials placed at the top and bottom of the sign, thus: $\int_b^a$.
T = Temperature, Thickness, Time.
U = Unit.
V = Velocity, Versed Sine, Volume.
W = Weight or Load, Work.
Z = Modulus.

α (Alpha) = angle, coefficient.
β (Beta) = angle, coefficient.
γ (Gamma) = inclination.
Δ (Delta) = Finite Difference.
δ (Delta) = distance, variation.
ϵ (Epsilon) = extension, base of Napierian or hyperbolic system of logarithms, reciprocal of E.
ζ (Zeta) = abscissa, coefficient, width.
η (Eta) = efficiency.
θ (Theta) = angle, absolute temperature.
λ (Lambda) = latitude, longitudinal extension, strain.
μ (Mu) = Moment of Resistance, Poisson's Ratio.
π (Pi) = ratio of circumference of a circle to diameter = 3·14159265358979323846264338327950 + (usually taken at 3·1416).
ρ ϱ (Rho) = radius, ratio, ratio of circumference of a circle to radius (usually taken at 6·2832), resistance.

Σ (Sigma) = Summation, the Sum of Finite Quantities.
σ (Sigma) = coefficient, Poisson's ratio, volume.
φ (Phi) = angle, or the supplement of an angle, entropy.
Ω (Omega) = Megohm (see Electricity).
ω (Omega) = angular velocity.

(2) *Materials and Structures.*

a = area.
b = breadth, width of a beam.
d = deflection, deflection of a beam, depth, depth of a beam, diameter.
e = extension or stretch per unit of length in an elastic strain, coefficient of expansion.
f = coefficient of friction, unit stress, extreme fibre stress in a beam, modulus of transverse rupture, rise of an arch
h = height, distance from neutral axis to the surface of a beam.
i = inclination or slope.
k = radius of gyration.
l = length, length of span between supports of a beam or abutments of an arch.
p = unit stress, or intensity of stress.
q = intensity of tangential stress.
r = radius, radius of gyration, rise of an arch.
s = strain.
t = thickness.
v = vertical component of a strain.
w = unit weight or load.

A = Area.
B = Breadth.
C = Crushing Strength, Modulus of Rigidity or Shear Modulus.
D = Deflection, Depth, Diameter.
E = Coefficient or Modulus of Elasticity, *i.e.*, the Modulus of Longitudinal Extensibility, Young's Modulus, or the Stretch Modulus.
F = Force, Tensile Force, Tensile Strength, Total Stress, Factor of Safety.
G = Centre of Gravity of a Figure.
H = Height, Horizontal Thrust at Support of an Arch.
I = Moment of Inertia.
K = Coefficient or Modulus of Cubic Compressibility or Bulk Modulus.
L = Length, Length of Span Between Supports of a Beam.
M = Modulus of Transverse Rupture, Bending Moment, Moment of Resistance.
P = Pressure, Force, or Thrust, Normal Stress, Vertical Force, Load on a Column, Reaction at One Support of a Beam.
Q = Horizontal Force, Tangential Stress, Reaction at One Support of a Beam.
R = Moment of Resilience, Moment of Resistance, Radius of Curvature, Resistance of a Column.
S = Shearing Stress, Span of an Arch or Beam.
T = Toickness, Modulus of Torsion.
V = Vertical Component of Strain.
W = Weight or Load on a Beam or other Member, Breaking Weight, Weight.
Z = Modulus of a Structural Section of Material, a Geometrical Quantity Depending upon Shape and Size.

δ (Delta) = central deflection of a beam.
ε (Epsilon) = moment of inertia.
λ (Lambda) = longitudinal strain.
μ (Mu) = bending moment, Poisson's ratio.
σ (Sigma) = Poisson's ratio.
B.M. = Bending Moment.
B.W.G. = Birmingham Wire Gauge.
S.W.G. } = Standard Imperial Wire Gauge.
I.W.G. }
O.G. = Ogee.
c.g. = centre of gravity.
s.g. = specific gravity.
r.s.j. = rolled steel joist.

(3) *Heat, Water, and Air.*

c = coal consumption per second, specific heat.
d = diameter, density.
f = coefficient of friction.
g = gravity, grate area of a boiler.
h = head, loss of head, heating surface of a boiler.
k = coefficient of contraction, or discharge.
p = pressure.
r = coefficient of contraction, or discharge.
t = temperature, temperature of hot air or water, difference of temperature.
u = unit of heat (*see* B.Th.U.).
v = velocity, velocity of hot air, volume.

A = Area.
B = Barometric Height.
C = Centigrade, Coal Consumption per Hour, Cubic Feet, Specific Heat.
D = Density, Discharge, Hydraulic mean depth.
F = Fahrenheit.
G = Gallons Discharged, Grate Area of a Boiler.
H = Head, Heat, Height.
M = Manometric Efficiency.
P = Pressure.
Q = Quantity Discharged.
R = Reamur.
S = Surface, Heating Surface of a Boiler, Stroke of Engine Piston.
T = Temperature, Temperature of Cold Air or Water.
U = Unit of Heat (*see* B.Th.U.).
V = Velocity, Velocity of Cold Air, Volumetric Efficiency.
W = Coal Consumption, Weight, Work.
θ (Theta) = Absolute temperature.
φ (Phi) = Entropy.

B.T.U. } = British Thermal Unit.
B.Th.U. }
B.H.P. } = Brake Horse Power.
b.h.p. }
I.H.P. } = Indicated Horse Power.
i.h.p. }
N.H.P. } = Nominal Horse Power.
n.h.p. }
R.P.M. } = Revolutions per Minute.
r.p.m. }

(4) *Electricity.*

a = ampere, area.
c = current, strength of electric currents.
e = efficiency, electromotive force.
k = heat conductivity.
m = strength of a magnet pole.
ml = moment of a magnet.
q = quantity of electricity.
r = specific resistance of metal.
s = sectional area.
t = temperature, difference of temperature.
v = volt, ratio of electrostatic to electromagnetic unit of quantity.
w = Watt, measured resistance.

A = Ampere, Asynchronous.
B = Magnetic Induction.
C = Current, Strength of Electric Current.
D = Duty.
E = Difference of Potential or Pressure, Earth, Electromotive Force.
F = Force, Frequency, Power absorbed in Electrical Work, Magnetic Moment.
G = Gramme.
H = Heat developed, Intensity of Magnetic Field.
I = Impedance, Intensity of Magnetisation.
J = Joule.
K = Heat Conductivity.
L = Inductance.
M = Magnetomotive Force.
N = North pole of a magnet, Magnetic Flux.
O = Neutral, or Earth Potential.
P = Potential.
Q = Quantity of Electricity.
R = Resistance, Ohmic Resistance.
S = South pole of a magnet, Second, Sectional area.
T = Time.
V = Volt.
W = Watt. Work.
Γ (Gamma) = ampere.
μ (Mu) = magnetic permeability.
ρ (Rho) = resistance.
Υ (Upsilon) = Milliampere ($\frac{1}{1000}$ Γ).
Ω (Omega) = Megohm.
ω (Omega) = Ohm.
A.C. = Alternating current.
B.T.U. = Board of Trade units = 1,000 Watt-hours.
C.C. = Continuous or direct current.
C.G.S. = System of measuring electricity, the unit of which is one dyne.
D.C. = Direct or continuous current, the Centimetre-Gramme-Second.
E.H.P. = Electrical horse power = 746 Watts.
E.M.F. = Electromotive Force.
KW. = Kilowatt.
M.G.S. = The Metre-Gramme-Second system of measuring electricity. (The M.G.S. = 100 dynes.)
P.D. = Potential difference.

(5) *Metrical Abbreviations (Paris Conference, 1881).*

Linear Measure.	*Cubic Measure.*
km = kilometre.	*km*³ = cubic kilometre.
m = metre.	*m*³ = ,, metre.
dm = decimetre.	*dm*³ = ,, decimetre.
cm = centimetre.	*cm*³ = ,, centimetre.
mm = millimetre.	*mm*³ = ,, millimetre.
Square Measure.	*Weight.*
*km*² = square kilometre.	*t* = tonne = 1000*kg*.
*m*² = ,, metre.	*q* = quintal = 100*kg*.
*dm*² = ,, decimetre.	*kg* = kilogramme.
*cm*² = ,, centimetre.	*dkg* = decagramme.
*mm*² = ,, millimetre.	*g* = gramme.
ha = ,, hectare.	*dg* = decigramme.
a = ,, are.	*cg* = centigramme.
	mg = milligramme.

Capacity.
hl = hectolitre.
l = litre.
dl = decilitre.
cl = centilitre.

OBITUARY.

MR. HENRY JOHN YOUNG.—We regret to announce the death, at the early age of thirty-six, of Mr. Henry John Young, jun., eldest son of Mr. H. Young, of Messrs. H. Young & Co., Nine Elms, with whom he served his apprenticeship, and on whose staff he has since been occupied in the design and execution of constructional engineering work. In this some of the most important buildings in London were included. At the time of his death he was engaged as Consulting Engineer for the new Piccadilly Hotel buildings now in progress, and a distinguished professional career seemed to lie before him. He leaves a widow and three children. Being a Past-Chairman of the Junior Institution of Engineers, a number of the members were present at the funeral, bearing testimony to the esteem in which he was held. To perpetuate his memory a fund has been opened with the object of placing a bronze medallion portrait in the reading-room of the Institution.

BUILDING IN GRIMSBY.—Generally speaking, builders and contractors have experienced a quiet year, and they are fervently hoping that a revival may characterise 1906. The absence of any particularly large schemes has had the effect of making labour more plentiful than work, and but for the fairly extensive erection of house property the year would have been abnormally disappointing to the building and kindred trades. Practically the enlargement of Messrs. Marshall's mills in Victoria-street and the new "Tivoli" are the only important schemes that have occurred during the year, though the improvement of "Palmer's corner" and the completion of the Sheffield Arms have given a good deal of employment.

GENERAL BUILDING NEWS.

SCHOOL, STRATHDON.—A new school has been built near the Bridge of Poldullie, Strathdon, from the designs of Mr. George Bennett Mitchell, architect, Aberdeen, and the contractors for the various works were:—Mason, Mr. James Gerrie, Cambus o' May; carpenter, Mr. Thomas G. Archibald, Huntly; slaters, Messrs. S. Christie, jun., & Company, Dyce; plasterer, Mr. William Rust, Huntly; plumber, Mr. William Leask, Alford; and painters, Messrs. W. Duguid & Son, Ballater.

ENLARGEMENT OF BOSTON HOSPITAL.—A new wing which has been added to Boston Hospital at a cost of 1,000*l*. was opened on the 22nd ult. The new wing is situate at the north-west corner of the existing building, and has been erected from plans by Mr. Samuel Marjason, architect, of Boston, by Messrs. H. W. Parker & Son, contractors, Boston. The clerk of works was Mr. Rossington. The additions consist of duplicate sets of wards, kitchens, sink-rooms, bath-rooms, lavatory, etc., accommodation on each floor. The exterior is faced with white bricks, has stone dressings and red-moulded brick to harmonise with the old building. The interior walls have green and white glazed tile and brick dadoes, with circular glazed tiles at junction of walls and floors. The first floor is of fireproof construction, formed of steel joists and concrete. The corridors are paved with terrazzo mosaic paving and the rooms are paved with encaustic tile paving. In addition to the new wing a new lift, by Messrs. Waygood, of London, has been erected.

THE GRANITE AND BUILDING TRADE OF ABERDEEN.—The building trades in Aberdeen have been less fully occupied during last year than in its predecessor. Within the city, as the records of the Burgh Surveyor's Department show, the number of new erections, and the alterations on dwelling-houses and business premises have been fewer than in 1904, and not only in that year, but for a considerable time past. Still it would be wide of the mark to say that 1905 has witnessed depression. It would be more accurate to affirm that the previous years had witnessed an undue expansion, and that the gradual declinature in the totals of late mark a return to a more cautious policy and a wiser regard for the requirements of the city. In the quantity of unoccupied property—the assessable value of which is nearly 29,000*l*.—lie proofs of the overbuilding that has taken place in recent years, and, if a much needed halt is now being called in this direction, therein is a sign not necessarily of stagnation, but of a return to a normal and healthier view of the situation. Under the head of new dwelling-houses, alterations to existing houses, and extension of business premises, there is an aggregate of 419, and the value of these operations is stated at 223,681*l*. It is true that, compared with the figures for 1898—the year of the "boom," when the total was 514,113*l*.—the difference is striking; but set alongside of 1904—a juster comparison—the decrease in 1905 is only some twenty-three buildings, and in value only about 4,000*l*. Naturally, fewer builders have been required. On an average there have been about 300 fewer masons engaged in the building sections than has been the case during the past year or two. These, however, have not remained unemployed. While probably not earning so much as they would have done at their own business, they have been able to turn their hand to divers other jobs—such as carting, and labouring in some of the departments of shipbuilding; while a good many have gone to America. The local prospects, however, are not bright. The public buildings at present on hand—the extension of Marischal College and the new theatre—are nearing completion; and the coming year will witness the discharge of probably between one and two hundred men.—*Scotsman*.

BUILDING TRADE IN DUNDEE.—Little work of importance has been inaugurated in the building trades, and it would appear as if the new year were to be equally quiet, although the cry of the unemployed is not nearly so accentuated as at this time last year. The only works entered upon by the Corporation have been new public washing-houses in Miller's Wynd and the extension of Craig-street Market. James United Free Church congregation are erecting a new building in Arklay-street, in the Clepington district. The only other work of a public kind completed is an addition to the Victoria Hospital for Incurables, consisting of cancer wards. The residential property built has, for the most part, been of the tenement class.

NEW ISOLATION HOSPITAL, WALTHAM ABBEY.—The buildings comprise entrance lodge, administrative building, an isolation block with four beds, diphtheria block with eight beds, scarlet fever block with twelve beds, and laundry and mortuary block. The whole are surrounded with a fence 6 ft. high, except that the lodge and administrative block are on the line of the fence. All other buildings are not less than 40 ft. from the fence and from each other, and are grouped round a lawn in the rear of the administrative building. The isolation block consists of nurses' duty room and two wards, each entered from a verandah, so as to be as completely as possible isolated from

each other. The diphtheria block is situated to the west of the lawn, and consists of nurses' room, bathroom, two wards (male and female) with four beds each, and the usual offices on the ground floor, whilst over the nurses' room is a linen and cistern room. This block follows the almost invariable plan adopted throughout the country for the pavilions of isolation hospitals. The scarlet fever block is situated to the east of the lawn, and is similar to the last, but with six beds in each ward. It has on the first floor a large convalescent room. The laundry block is situated at the south-west corner of the quadrangle formed by the last four mentioned buildings. It consists of the laundry, with washing and ironing room fitted with the most modern appliances for a hand-labour laundry by Messrs. Summerscales; it also includes the disinfecting station, which consists of one room from which the infected goods are placed in the disinfector (one of Dr. Thresh's) and another room from which they are removed when disinfected. There are also in this block a large coal store, a mortuary, shed for ambulance, and a large store shed. Except for some half-timber work and rough-cast introduced, the buildings in general are faced with local red bricks and covered with Broseley tiles. Internally the walls and ceilings of the administrative block and the lodge are plastered with sirapite, a material harder and capable of being finished with a smoother face than ordinary plastering, and are coated with Hall's washable distemper. In the ward blocks skirtings are omitted and all corners rounded so as not to harbour dust. The floors of the wards and nurses' room are pitch pine and polished; the bathroom, passages, etc., are tiled. The sanitary fittings have been supplied by Messrs. Morrison & Ingram. The wards are warmed with Messrs. Shorland's ventilating grates and stoves, and the remainder of the rooms with open fireplaces. As there was no sewer available, sewage purification works have had to be constructed. These consist of a pair of septic tanks and a bacteria bed fitted with one of the Automatic Sewage Distributer Company's revolving sprinklers. The architects are Messrs. Walter Stair, of Chingford, and Herbert Tooley, of Buckhurst Hill; and the contractor Mr. J. Bentley, of Waltham Abbey. The contract price was 7,100*l.*

NEW ASYLUM, YORK.—York City Council are erecting an asylum at Naburn. The new buildings are of red brick with stone dressings. The plan of the building, which was designed by Mr. A Creer, the City Engineer, is in accordance with the requirements of the Commissioners in Lunacy, and is, roughly, fan-shaped. The main façade is to the south, and extends for a distance of 740 ft. from north-east to south-west; the depth from north to south being 430 ft. The chief entrance is by a broad avenue from the main road from York to Naburn. The entrance-hall is flanked by the principal administrative offices, committee-rooms, and so on, the wings being formed of the ward blocks, of which there are six, those for males being on the north-east side, and three female blocks occupying the south-west side. The present accommodation is for 362 patients, but the facilities for extension will admit of the erection of a female block to accommodate 74 inmates, while the male accommodation may be increased to another fifty, giving a grand total of 284 females and 202 males. The accommodation is divided on each side into epileptic, chronic, recent and acute, sick and infirm. In addition to offices for the medical superintendent, assistant medical superintendent, clerks, storekeepers, etc., there is a bakehouse furnished with modern appliances, a laundry, a store, engine-house, boiler-house, and workshops where employment will be found for the artisan patients. Each ward is furnished with larders and pantries adjacent, and lavatories. Hydrants are placed inside and around the building. Fire alarms and telephones are placed all over the building. Corridors communicate from the administrative block to every part of the institution. The first floor is made of fire-resisting materials, while under each corridor is a subway along which the steam pipes, water pipes, and electric lighting cables all radiate from the engine-room. The heating will be by means of exhaust steam from electric lighting engines and pumps. A feature of the building is a water-tower, 90 ft. high, surmounted by a tank with a capacity of 18,000 gallons. The hot water supply is generated by means of two tubular heaters fixed in the pump-room. The whole of the institution will be lighted by electric light generated on the premises. A dining-hall and recreation-room with stage, proscenium, etc., has been provided, capable of seating 600 persons. This apartment will be heated and ventilated on the plenum system. A chapel in the Early English style has been erected in the grounds facing the road. A residence for the medical superintendent has been built in the grounds, and also a lodge and several cottages for the attendants. The estimated cost of the institution, fully equipped, is 133,000*l.* Of the total cost, the building contract absorbs 90,453*l.*; the land and incidental costs of the purchase, 14,034*l.*; furnishing, 7,000*l.*; isolation hospital, 915*l.*; planting and fencing grounds, airing courts, etc., 473*l.* The cost works out approximately at 280*l.* per bed, exclusive of the land, the sum representing the cost of the contemplated future extensions to an accommodation of 486.

FOREIGN.

FRANCE.—The Académie des Beaux-Arts have elected Mr. Whitney Warren as Corresponding Member in the Section of Architecture, in place of the late Signor Sacconi, of Rome. Mr. Warren, a former pupil of the Ecole des Beaux-Arts, had obtained a premium in the competition for the Baltimore State House, and is architect of the New York Yacht Club House and the principal railway station there.——The Municipal Council of Paris have passed a vote of 1,200,000 francs for the arrangement and beautifying of the Champ de Mars and the making of approaches to it. When laid out as proposed, it will form a park twice as large as the Parc Monceau.——M. Theunissen (sculptor) and M. Savignac (architect) have been commissioned to carry out a monument, to be erected at Lamarche (Vosges), in honour of Colonel Renard, the inventor of navigable balloons.——The jury in the competition for a group of schools at Saint-Cloud have awarded the first premium to MM. Félix and Emile Pjat and Auguste Roy.——A bridge is to be made over the Seine, between Levallois-Perret and Courbevoie.——The jury in the competition for new schools at Prés-Saint-Gervais have awarded the first premium to M. Bevière.——Important works are to be executed at Havre for the improvement and enlargement of the port and docks, at an estimated cost of near 6,000,000 francs.——Important street improvements are to be carried out at Poitiers, at an estimated expenditure of 1,000,000 francs.——The municipality of Aix-le-Bains intends to devote a sum of 2,200,000 francs to various buildings and street improvements.——A Roman piscina with marble revetement has been discovered at Néris-les-Bains.——The municipality of Carcassonne is about to open a competition for a new hospital.——The death is announced, at the age of thirty-eight, of M. Marcel Berger, a former pupil of M. Guadet. He carried out some important works in collaboration with Maistrasse, and was architect for the Hôtel de Ville of Argenteuil, the Trousseau Hospital, and various business buildings in Paris.

SOUTH AFRICA.—At Durban Sir Benjamin Greenacre laid the foundation-stone of the new premises to be erected for the Ladies' College, the cost of which is estimated at 12,500*l.* The building is to consist of three stories, and will be completed about July next. Messrs. Payne & Payne are the architects and Mr. W. F. Johnstone the builder.——Sir Henry de Villiers (Chief Justice), Sir John Graham, and Mr. C. H. van Zyl have been appointed by the Cape Government a Committee to investigate, in conjunction with Mr. Mervyn Macartney, and to decide upon the competitive plans for the new Law Courts, and to make a selection from the various designs.——At a meeting of the Cape Town City Council the proposed regulations for the erection of needle scaffolding were referred to the Master Builders' Association, and also, on the suggestion of Mr. Baxter, to the City Engineer.——When the last mail to hand left Cape Town tenders were being invited by the architects (Messrs. Reid & East) for the erection of a cottage hospital at Worcester.

MISCELLANEOUS.

PROFESSIONAL AND BUSINESS ANNOUNCEMENTS.—Mr. Henry Ough, M.Inst.C.E., architect and surveyor, of 64, Basinghall-street, having retired from business, has transferred his practice to Mr. J. Moir Kennard, A.R.I.B.A., of 13, Railway Approach, London Bridge, E.C.

DIARIES.—We have received from Messrs. Hudson & Kearns (Hatfield-street Works, Stamford-street, S.E.) specimens of their diaries for 1906. Those prepared for the use of architects, surveyors, civil engineers, etc., are Nos. 12 and 13—one and two pages to a day respectively, specially ruled and printed and with index—and excellent productions of the kind they are, including the facts usually to be found in a diary and, in addition, a great deal of information of use to professional men, such as: Cases decided in the Superior Courts of Justice during the legal year from November, 1904, to August, 1905, of interest to the profession; professional practice and charges of architects; complete list of metropolitan surveyors and districts, with official and private addresses, and list of architectural surveying and engineering institutions, with their presidents, etc. No. 11 is the builder's diary—two days to a page—and it contains: A series of practical tables of daily use in the calculations necessary in a builder's office, a series of tables on the valuation of property, leases, life interests, insurances, etc., estimate tables, a wages table, tables of scantlings, etc., for floors and roofs, method of cubing, with illustrated diagrams. These excellent diaries are well-printed and bound, and have been brought well up to date, for they contain a list of the new Ministry and principal officers of State.

THE LATE MR. RUDOLF LEHMANN.—The late Mr. Lehmann, who died on October 27, has left estate of which the gross value amounts to 34,491*l.* 15s. 6d., and the net personality is sworn at 34,343*l.* 8s. 3d. He bequeathes his picture—"May We Come In?"—to the Tate Gallery trustees, and his collection of musical instruments, etc., to the Hamburg Gewerbe Museum (already deposited there in last June); his trustees are directed to consult Sir Edward Poynter, P.R.A., Sir L. Alma-Tadema, R.A., and Professor Seymour Lucas in appraising the intrinsic value of his collection of pencilled portraits of celebrities signed by their subjects, and then, in the first place, to offer the portraits at that valuation to Professor Sidney Colvin for deposit in the prints and drawings department of the British Museum.

STATUE OF QUEEN VICTORIA, WOOLWICH.—The statue of Queen Victoria, recently unveiled at Woolwich Town Hall, was sculptured in Carrara marble by Mr. F. W. Pomeroy, and is a replica of his bronze statue executed for the city of Chester, representing the Queen in her robes of state.

MAPLE FLOORING.—According to Messrs. Foy, Morgan, & Co.'s annual report on the timber trade, a steady business continues to be done in this article, the merits of which are becoming more and more appreciated by all classes of users. Prices have slightly advanced during the past year, and it is not unlikely that they will go still higher in the near future; but even a further moderate rise in price would not make maple an expensive flooring when the lasting qualities of the wood are taken into account.

MANCHESTER IMPROVEMENTS.—Among matters which were proceeded with during the year was the purchase of properties for the widening of Cateaton-street, the widening of Hanging Ditch, Corporation-street, and a portion of Cannon-street, and the widening of Church-street, at the corner of High-street. Then there were the rebuilding of Minshull-street bridge, and the widening, paving, and making-up of Charles-town-road, Blackley. Water-street has been widened by the removal of the old bridge carrying the London and North-Western Railway Company's goods line over that street and the substitution of a modern steel bridge having a span of 48 ft.; and Prince's bridge, after rebuilding, was opened for traffic by the Lord Mayor and the Mayor of Salford on August 3. The new street between Ardwick station and Fairfield-street, now known as North Western-street, is complete. The formation and making-up of Higher Sheffield-street, the straightening and continuation of Hoyle-street, the widening of Temperance-street, the widening and completion of Walter-street, and other improvements in this immediate locality have been carried out by or at the cost of the London and North-Western Railway Company, except that a proportion of the cost of the new North Western-street is being borne by the Corporation, in accordance with the provisions of the company's Acts sanctioning the widening and extension of their railway between Ardwick station and London-road. There has been an extension of Station-road, Crumpsall, to Clarendon-road, which gives the residents in Clarendon-road and the locality a direct route to the station, which has hitherto had to be approached by vehicles by a detour to the north and through Bury Old-road, Seymour-road, Lansdowne-road, and Crumpsall-lane. Four new roads were formed, opening out the district of Clayton Vale and forming connexions between Newton Heath and Clayton. These works, though previously contemplated, were commenced and the roads formed with a view to giving employment to unemployed citizens. A new trunk road connecting Slade-lane with Wilmslow-road is in course of formation. The sewering and other works are now in progress. When this road is completed it will form a continuation of Wilbraham-road, and will be a direct route between the main roads named, and thence by Albert-road to Stockport-road in an easterly direction and in a westerly direction by Wilbraham-road to Chorlton. This new road is to be made 18 yds. in width. The widening and improvement of Middleton-road, Blackley, between Sheepfoot-lane and the Three Arrows public-house was undertaken with the view of giving employment. A new trunk road, known as Victoria-avenue, which is about one and a half miles in length, is being made up as a builder's road by the Corporation across the estate of the Earl of Wilton, at a cost of about 10,000*l.*, the greater part of which cost will be borne by the Earl of Wilton. When this work is completed it will form a main thoroughfare from Rochdale-road, Blackley, to Middleton-road, near the Heaton Lodge entrance to Heaton Park. The Corporation have obtained Parliamentary powers to construct tramways in this road when the road is finished. Among the most costly improvements at present under consideration is

that of the widening of Cross-street. Two-thirds of the property required for this improvement has been purchased during the year, and the negotiations are now proceeding with a view to the acquisition of the remainder of the property.—*Manchester Courier.*

BRITISH GOODS AT CAPE TOWN AND CHICAGO.—The Board of Trade desire to draw the attention of the commercial community to the fact that Mr. E. J. Cattell, their correspondent at Cape Town (who is also the Secretary of the Cape Town Chamber of Commerce), and Mr. A. Finn, H.M. Consul at Chicago, are prepared to receive samples from British manufacturers, at the manufacturers' risk, but free of expense to them except as noted below, and to exhibit such samples, respectively, at the Chamber of Commerce and at the Consulate. Prices should be attached in sterling f.o.b., or c.i.f., or if possible in currency, landed, duty paid. No charge is proposed at Cape Town, but at Chicago a small fee of 5s. per square foot occupied by the exhibitors has to be made for any period not longer than a year.

BIRMINGHAM ART GALLERY AND UNIVERSITY.—The late Mr. John Feeney, who in his lifetime presented to the Art Gallery some examples of Rossetti and Sir E. Burne-Jones, with fine collections of Oriental armour, Japanese enamels, and ivories, etc., has bequeathed 50,000*l.* to the Art Gallery, and 20,000*l.* to the University for the endowment of a professorship for lectures upon subjects having a direct bearing upon the local trades and industries.

THE LATE MR. A. W. MILLS.—A sum of 21,000*l.* to the Manchester and district charities and numerous legacies to his servants are bequeathed under the will of the late Mr. Mills, architect (of the firm of Messrs. Mills & Murgatroyd), whose estate is valued at 92,000*l.* The bequests include 8,000*l.* to the Manchester Society of Architects, 500*l.* to the Architects' Benevolent Society, 4,000*l.* to Owens College as permanent endowment, and 3,000*l.* to Manchester Grammar School to found scholarships tenable at Oxford or Cambridge.

PROPOSED SALES OF CHURCH PLATE.—At a sitting of the Consistory Court in Exeter Cathedral on December 20, Mr. C. E. H. Chadwyck-Healey, K.C., Chancellor of the Diocese, refused to grant a faculty for the proposed sale by the rector and churchwardens of Churchstanton of a silver chalice bearing the inscription "Churchstanton, 1660," and what is presumed to be a local hall-mark. It was desired to apply the proceeds towards the fund for a repair of the parish church, but the learned Chancellor was of opinion that, other objections apart, the donor of the chalice did not intend that it should be converted to such a purpose. On the other hand, Dr. Tristram, K.C., Chancellor of the Diocese of London, has just directed the issue of a faculty authorising the sale of a disused silver flagon, part of the Communion plate of Cowley parish church, near Uxbridge. The flagon, of early XVIIIth century workmanship, was given to the church by one Haynes, a parishioner; and an offer of 135*l.* is made for it. Dr. Tristram agreed to the appropriation of the proceeds of the sale, firstly, to the purchase of a smaller flagon, and, secondly, towards the erection, at an estimated cost of 600*l.*, of a parish club and mission room, for which a site has been presented.

S. PETER'S, BUDLEIGH SALTERTON.—Messrs. Percy Bacon & Brothers have just executed another window of three lights in this church, as a memorial. The lights contain the figures of S. Edward the Confessor, in the left light; S. George in the centre, and S. Alban in the other. There is also a memorial brass beneath the window.

OPEN DOMESTIC FIRE GRATES.—We have received from Dr. Pridgin Teale a very interesting and courteous letter in which he takes exception to a statement of ours in our issue of December 16 ("Tests of Open Domestic Fire Grates") about fire grates "of the well-known type recommended by Dr. Teale." The type to which we referred is, of course, that which was first recommended by Dr. Teale and is now generally associated with his name; it is known by its splayed sides, forward-sloping back, economiser, and vertical front bars. Dr. Teale reminds us that "the fireplace in which the fire is sunk below, or rather behind, the hearth, so as to substitute the hearth raised above the grid for front bars, was invented by my son and myself," and adds that "the various sunk fireplaces are more or less a copy of his patent and were brought out a considerable time after his invention." We had not forgotten this later grate invented by Dr. Teale and his son and patented by the latter; but we still think that our reference to "the well-known type recommended by Dr. Teale" was not misleading. The grate invented by himself and his son, and known, not as the "Teale" but as the "Front Hob Fireplace," obviously belongs to the class which we described as "a more modern kind without front bars." Dr. Teale's name is so honourably associated with the reform that has taken place in domestic fire grates in recent years, that we should be very sorry indeed to say anything which might in any way detract from the credit due to him.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

19,469 of 1904.—A. R. HUBBARD and R. FLAY: *Kitchen Ranges.*

This relates to kitchen ranges, and consists of a fire grate constructed with teeth, cast upon two parallel horizontal shafts or axes, the teeth being formed with two of their sides of greater length than the third or top side, the three sides being convex in end view, and the two lower sides terminating in a point at the bottom and presenting a greater surface for the air to travel through in its passage to the fire, the two shafts being carried through from the front to the back of the fireplace and arranged to revolve in bearings in the latter, and geared together so that when one of the shafts is turned more or less, the two shafts with their teeth are caused to rock, and the fuel resting upon them is agitated to any desired extent.

19,470 of 1904.—A. R. HUBBARD and R. FLAY: *Boilers for Kitchen Ranges and the like.*

This relates to a boiler for kitchen ranges and the like, consisting of a hollow metal ring placed horizontally at a short distance above a fire pot or grate below, so that the flame and hot products of combustion heat the bottom and inner side of the hollow ring, through which they pass, and are then conveyed away to a chimney and a circulating pipe supplying water to the interior of the boiler.

3,941 of 1905.—W. G. HARRISON and T. WORRALL: *Locks and Latches, such as Rim and Mortise, which are Adapted to be Operated by a Key from either Side of a Door.*

This relates to locks and latches, such as rim and mortise, which are adapted to be operated by a key from either side of a door, and consists of a bridge fixed about midway between the front and back plates of the case, beyond which the key-bit cannot be passed in inserting the key within the case prior to turning it therein, in combination with a bolt, which may be moved by the key, as the key-bit is simply turned round at either side of the bridge after the bit has been inserted into the case up to the bridge only, from the corresponding side thereof.

4,584 of 1905.—H. R. ANTCLIFF: *Fasteners for Windows, Doors, and the like.*

This relates to a fastener for windows, and consists of a bracket fixed in a line with the top sash of the window frame, said bracket having an inclined piece pivoted thereto, in such a manner that the end of the pivoted piece always bears against a right-angled projecting plate fixed to the other sash, a peg on the plate of the bracket takes a hole in the right-angled projecting plate, the sashes or parts being firmly held together until the end of the pivoted inclined piece is turned free of the right-angled projecting plate when the window is opened, and when the window is being closed the edge of the right-angled projecting plate takes against the edge of the inclined piece, and turns the same free on one side until the right-angled projecting plate is free of the end of the inclined piece when the same moves into its closed position.

5,799 of 1905.—C. W. TONKS, G. A. TONKS, and E. TONKS: *Pre-payment Locks for Closets and the like.*

This relates to a pre-payment lock for closets and the like, and consists of a device, which, as the latch bolt is moved in by the closing of the door, is thereby caused to press upon the coin and ensure that it will fall clear of the mechanism in case it does not otherwise fall, and such bolt is moved in.

6,107 of 1905.—H. WILSON: *Boilers for Kitchen Ranges and like Purposes.*

This relates to boilers for kitchen ranges and other purposes, and consists of a flue or passage being formed through the body of the ordinary rectangular or like-shaped boiler usually constructed of copper, and fixed behind the fire-grate space of a kitchen range. The flue or passage is preferably of a flattened oval shape, but it may be of round, square, or any suitable form, and extends from the back part of the bottom of the boiler to the front part of the top, thus forming a diagonal flue through the boiler. Instead of one such flue two or more may be employed.

6,168 of 1905.—W. C. KIMBER, H. T. TALLOCK, and W. F. STANLEY & CO., LTD.: *Drawing Appliances.*

This relates to drawing appliances, and consists of a substantial frame having hard wood runners upon right and left hand edges. A metal bar of the length of the frame is mounted upon wheels running upon the said runners, the parallel motion of which is ensured by an endless wire passing over pulleys at top and bottom of frame, and crossed underneath, so that the wire from the top of the bar on one side is fixed to the bottom of the bar on the opposite side and *vice versâ*, suitable pulleys being provided under the frame for guiding the wire.

6,526 of 1905.—A. H. NEWEY: *Ventilators.*

This relates to ventilators, and is characterised by a quick grooved screw plug working in a collar on a perforated face plate, the one end of the screw plug being attached to a back plate in such a manner that when the screw plug is partly rotated the back plate is caused to recede away from or move towards the face plate.

7,199 of 1905.—J. F. BUCKLEY: *Disinfecting Apparatus in Connexion with the Water Waste Preventers of Water-closets and the like.*

This relates to a disinfecting apparatus for water-closets and the like, and consists in effecting the horizontal travel of a slide to discharge the tablets by means of a link connected to the ball lever.

9,050 of 1905.—R. W. SEWELL: *Mortise and other Locks for Doors and the like.*

This relates to mortise and other locks for doors and the like; and consists in the arrangement of a spring latch, the head of which protrudes from and works through a face plate, whilst its stem is carried by and works through and within one or more bent, bifurcated, and elbow-pivoted levers, and which latch is opened by an ordinary rotating or other style knob or handle impinging or acting on said pivoted lever or levers.

10,665 of 1905.—H. F. E. HOFMANN: *Spade.*

This relates to a wooden spade having a blade consisting of several parts, and is characterised by the fact that the blade is composed of a number of separate narrow laths or staves, the middle stave carrying the shaft and two edge or side strips, the said staves and strips being shaped to form the blade, and held together by means of anchor wires or tie-rods running transversely through the staves and strips.

11,629 of 1905.—DR. O. ZIMMERMANN: *Formation of Stacks of Tubes Especially Applicable for Water Cooling and Heating Apparatus and the like.*

This relates to a process for the formation of stacks of tubes especially applicable for water cooling and heating apparatus, in which process end pieces are formed by pouring molten metal into the space between the ends of the tubes and the casing surrounding the same, said end pieces being thus produced firmly cast upon the tubes and casing ready for forming the ends of the apparatus.

14,672 of 1905.—T. P. RUDKINS and P. K. O'BRIEN: *Means for Lifting and Otherwise Transferring Goods.*

This relates to a device for lifting and otherwise transferring goods, and consists in the combination with a supporting frame of means for connecting it to a platform, a truck pivotally connected to the frame, a lever or levers for turning an axle or the like, having frame support, and connexions between the axle and the truck.

15,035 of 1905.—C. H. LOVERING: *Gates.*

This relates to a gate comprising oppositely disposed posts, a cross piece connecting the upper ends of the post, a gate hinged at its lower rear end to each post, levers pivoted upon said cross piece, said levers being pivoted together at their inner ends, a connexion between the outer end of each lever, and the rear of the gate there beneath, and means connected with the aforesaid connexion whereby both gates may be tilted simultaneously.

15,570 of 1905.—J. W. WESTWOOD, C. BARTEL, and T. TAYLOR: *Apparatus Forming a System for Combined Hot-water and Steam Warming of Buildings and the like.*

This relates to an apparatus forming a system for combined hot-water and steam warming of buildings and the like, consisting of a steam generator, a hot water heating boiler or part boiler, a tank situated at the top of the building, having two plates in connexion with the flow pipe, distributing return pipes in connexion with radiators, the steam pipe with automatic valve, the injector or steam mixer in connexion with the flow pipe, the automatic float valve in the tank, the controlling weighted safety valve in the tank, a valve in said tank being connected by levers, with the valve in the main steam pipe.

27,308 of 1904.—J. WARD: *Tar Paving.*

This relates to tar paving, and consists in the employment of a bonding tar compound for adhering and holding the pieces of stone together, consisting of distilled tar and ground lime, ground chalk, limestone dust, or like, alkaline powdered earth or substance, compounded by adding the powdered substance to the tar while in a hot state.

5,865 of 1905.—W. HEPWORTH-COLLINS: *Construction of Conduits for Containing Electric Cables and Wires and other Wires, Tubes, Pipes, and the like.*

This relates to the construction of conduits for containing electric cables, and wires, and other wires, tubes, pipes, and the like, and consists in the combination of a number of rectilinear

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

ctional lengths to form the sides and part of p and bottom with two T sections, to form the st of the bottom and the lid.

1097 of 1905.—F. M. PROCKTER and J. B. HOWORTH: *Apparatus for Supplying Humidified Air to the Interior of Buildings.*

This relates to an apparatus for supplying and distributing humidified air, comprising a shallow vessel for containing the liquid for humidifying the air, and consists of a fan situated in a shaft above it with a deflector intervening between said fan and liquid, and another deflector overhanging said fan.

1666 of 1905.—H. SUTCLIFFE: *Means for Joining Flushing Pipes to Closet Basins, or for Making like Pipe Connexions.*

This relates to a device for joining flushing pipes to the flushing horns of water-closets, or for making like pipe connexions, comprising a cone having a number of radial leaves, each one of which is slightly twisted in such a manner that when applied to form a joint the said leaves overlap and present a solid or unbroken surface, without interstices.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 5.—By COOPER & GOULDING.

Upton Park.—35 to 45 (odd), 65, 67, and 69, Lucas-av., u.t., 92 and 92½ yrs., w.r., 327s. 12s. £1,650

By WALLIS & CLUNN.

Strand.—43, Bedford-st. (Williams' Dining Rooms), l., y.r. 90l. 2,550

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for possession; e.r. for estimated rental; w.r. for weekly rental; q.r. for quarterly rental; y.r. for yearly rental; u.t. for unexpired term; p.a. for per annum; yrs. for years; la. for lane; st. for street; rd. for road; sq. for square; pl. for place; ter. for terrace; cres. for crescent; av. for avenue; gdns. for gardens; yd. for yard; gr. for grove; h.h. for beerhouse; p.h. for public-house; o. for offices; s. for shops; ct. for court.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, and papers read at meetings rests, of course, with the authors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for drawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this office, unless he has specially asked for them.

Letters or communications (beyond mere news items) which have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the name and address of the sender whether for publication or not. No notice can be taken of anonymous communications.

We are compelled to decline pointing out books and giving addresses.

Any commission to a contributor to write an article, or to execute or lend a drawing for publication, is given subject to the approval of the article or drawing, when received, by the Editor, who retains the right to reject it if unsatisfactory. The receipt by the author of a proof of an article in type does not necessarily imply its acceptance. The Editor cannot undertake to read and consider articles offered for acceptance unless they are type-written.

All communications regarding literary and artistic matters should be addressed to THE EDITOR; those relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, and not to the Editor.

MEETINGS.

FRIDAY, JANUARY 12.

Institution of Civil Engineers (Students' Meeting).—Professor J. D. Cormack, B.Sc., on "The Theory of Machines." 8 p.m.

MONDAY, JANUARY 15.

Royal Institute of British Architects.—President's "At Home." A small Exhibition of Working Drawings is being arranged for the occasion. 8.30 to 11 p.m.

Surveyors' Institution.—Mr. A. T. Walmisley on "Modern Surveying Instruments." 8 p.m.

London Institution.—Mr. J. Guinness Broodbank on "The Port of London," illustrated. 5 p.m.

TUESDAY, JANUARY 16.

Architectural Association Camera and Cycling Club.—Mr. G. Trotman on "Winchester Cathedral." 7.30 p.m.

The Institution of Heating and Ventilating Engineers.—Annual general meeting (Institution of Mechanical Engineers, Storey's-gate). Election of officers, etc., Presidential address by Mr. W. Nelson Haden, and paper by Mr. A. H. Barker on "Calorimetric Methods of Investigating the Loss of Heat from Buildings and Radiators." 7 p.m.

Institution of Civil Engineers.—Papers to be further discussed:—(1) "The Elimination of Storm-water from Sewerage Systems," by Mr. D. E. Lloyd-Davies. (2) "On the Elimination of Suspended Solids and Colloidal Matters from Sewage," by Lieut.-Colonel A. S. Jones, D.C., and Mr. W. O. Travis, M.D. 8 p.m.

WEDNESDAY, JANUARY 17.

The Quantity Surveyors' Association ("The Chinese Room," Holborn Restaurant).—Adjourned discussion upon Mr. F. B. Hollis's paper, "Some Thoughts on the Quantity Surveyor, and his Relation to the Building Owner, the Architect, and the Builder." 7 p.m.

Builders' Foremen and Clerks of Works Institution.—Annual meeting of the members. 8 p.m.

Edinburgh Architectural Association.—Mr. W. T. Oldrieve on "What H.M. Office of Works is doing for Historic Buildings in Scotland." 8 p.m.

Northern Architectural Association.—Mr. R. G. Hatton on "Jacobean Floral Patterns." 7.30 p.m.

Institution of Civil Engineers.—Students' visit to the works of the South Metropolitan Gas Company, 709, Old Kent-road, S.E. 2.30 p.m.

THURSDAY, JANUARY 18.

Society of Arts (Indian Section).—Mr. C. E. Buckland, C.I.E., on "The City of Calcutta." 4.30 p.m.

Society of Arts (Howard Lecture).—Professor Silvanus Thompson, D.Sc., on "High Speed Electric Machinery with Special Reference to Steam Turbine Machines." I. 8 p.m.

FRIDAY, JANUARY 19.

Architectural Association.—Mr. F. Lynn Jenkins on "The Consideration of Sculpture by Architects." 7.30 p.m.

Royal Institution.—Professor J. J. Thomson on "Some Applications of the Theory of Electric Discharge to Spectroscopy." 9 p.m.

Institution of Mechanical Engineers.—(1) Discussion to be resumed and concluded on paper on "The Behaviour of Materials of Construction Under Pure Shear," by Mr. E. G. Izod; (2) Mr. Robert A. Bruce on "Worm Contact." 8 p.m.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£	s.	d.	
Hard Stocks	1	7	0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1	4	0	" " "
Facing Stocks	1	16	0	" " "
Shippers	2	0	0	" " "
Flettons	1	5	6	" at railway depôt.
Red Wire Cuts	1	11	0	" " "
Best Fareham Red	3	12	0	" " "
Best Red Pressed Ruabon Facing	5	0	0	" " "
Best Blue Pressed Staffordshire	4	1	0	" " "
Do. Bullnose	4	6	6	" " "
Best Stourbridge Fire Bricks	3	15	6	" " "
GLAZED BRICKS.				
Best White and Ivory Glazed Stretchers	12	0	0	" " "
Headers	11	0	0	" " "
Quoins, Bullnose, and Flats	16	0	0	" " "
Double Stretchers	19	0	0	" " "
Double Headers	16	0	0	" " "
One Side and two Ends	19	0	0	" " "
Two Sides and one End	20	0	0	" " "
Splays, Chamferred, Squints	20	0	0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12	0	0	" " "
Quoins, Bullnose, and Flats	14	0	0	" " "
Double Stretchers	15	0	0	" " "
Double Headers	14	0	0	" " "
One Side and two Ends	15	0	0	" " "
Two Sides and one End	15	0	0	" " "
Splays, Chamferred, Squints	14	0	0	" " "
Second Quality White and Dipped Salt Glazed	2	0	0	" less than best.

	s.	d.	
Thames and Pit Sand	6	9	per yard, delivered.
Thames Ballast	5	3	" "
Best Portland Cement	26	0	per ton, "
Best Ground Blue Lias Lime	19	0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime	11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks	27s. 0d. per ton at rly. dpt.

STONE.

	s.	d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1	6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1	8½	" "
PORTLAND STONE (20 ft. average)—			
Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2	2½	" "

	s.	d.	
Ancaster in blocks	1	10	per ft. cube, deld. rly. depôt.
Beer "	1	6	" "
Greenshill "	1	10	" "
Darley Dale in blocks	2	4	" "
Red Corsehill "	2	2	" "
Closeburn Red Freestone	2	0	" "
Red Mansfield "	2	4	" "
YORK STONE—*Robin Hood Quality.*			
Scappled random blocks	2	10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	3	per ft. super., "
6 in. rubbed two sides ditto, ditto	2	6	" "
3 in. sawn two sides slabs (random sizes)	0	11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0	7½	" "
1½ in. to 2 in. ditto, ditto	0	6	" "

STONE (continued).

	s.	d.	
HARD YORK—			
Scappled random blocks	3	0	per ft. cube, deld. rly. depot.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2	8	per ft. super., "
6 in. rubbed two sides ditto	3	0	" "
3 in. sawn two sides slabs (random sizes)	1	2	" "
2 in. self-faced random flags	0	5	" "

	s.	d.	
Hopton Woo: (Hard Bed) in blocks	2	0	per ft. cube, deld. rly. depôt.
" " " 6 in. sawn both sides landings	2	7	per ft. super. deld. rly. depôt.
" " " 3 in. sawn both sides random slabs	1	0	" "
" " " 2 in. do.	0	8½	" "

SLATES.

In.	In.	£	s.	d.	
20	10 best blue Bangor	13	2	6	per 1000 of 1200 at r. d.
20	12 " "	13	17	6	" "
20	10 first quality "	13	0	0	" "
20	12 " "	13	15	0	" "
16	8 " "	7	5	0	" "
20	10 best blue Portmadoc	12	12	6	" "
16	8 " "	6	12	6	" "
20	10 best Eureka unfading green	15	17	6	" "
20	12 " "	18	7	6	" "
18	10 " "	13	5	0	" "
16	8 " "	10	5	0	" "
20	10 permanent green	11	12	6	" "
18	10 " "	9	12	6	" "
16	8 " "	6	12	6	" "

TILES.

	s.	d.	
Best plain red roofing tiles	42	0	per 1000 at rly. depôt.
Hip and Valley tiles	3	7	per doz. "
Best Broseley tiles	50	0	per 1000 "
Do. Ornamental tiles	52	6	" "
Hip and Valley tiles	4	0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57	6	per 1000 "
Do. Ornamental do.	60	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	0	" "
Best Red or Mottled Staffordshire do. (Peakes)	51	9	per 1000 "
Do. Ornamental do.	54	6	" "
Hip tiles	4	1	per doz. "
Valley tiles	3	8	" "
Best "Rosemary" brand plain tiles	48	6	per 1000 "
Best Ornamental tiles	50	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	8	" "
Best "Hartshill" brand plain tiles, sand-faced	50	0	per 1000 "
Do. pressed	47	6	" "
Do. Ornamental do.	50	0	" "
Hip tiles	4	0	per doz. "
Valley tiles	3	6	" "

WOOD.

BUILDING WOOD.	At per standard. £	s.	d.	£	s.	d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13	10	0	15	0	0
Deals: best 3 by 9	13	0	0	14	0	0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11	0	0	12	0	0
Battens: best 2½ by 6 and 3 by 6	0	10	0	less than 7 in. and 8 in.		
Deals: seconds	1	0	0	less than best.		
Battens: seconds	0	10	0	" "		
2 in. by 4 in. and 2 in. by 6 in.	9	0	0	10	0	0
2 in. by 4½ in. and 2 in. by 5 in.	8	10	0	9	10	0
Foreign Sawn Boards— 1 in. and 1¼ in. by 7 in.	0	10	0	more than battens.		
¾ in.	1	0	0	"		
Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4	10	0	5	0	0
Seconds	4	0	0	4	10	0
Small timber (8 in. to 10 in.)	3	12	6	3	15	0
Small timber (6 in. to 8 in.)	3	0	0	3	10	0
Swedish balks	2	10	0	3	0	0
Pitch-pine timber (30 ft. average)	3	5	0	3	15	0

JOINERS' WOOD.	At per standard. £	s.	d.	£	s.	d.
White Sea: first yellow deals, 3 in. by 11 in.	24	0	0	25	0	0
3 in. by 9 in.	22	0	0	23	0	0
Battens, 2½ in. and 3 in. by 7 in.	16	10	0	18	0	0
Second yellow deals, 3 in. by 11 in.	18	10	0	20	0	0
" " 3 in. by 9 in.	17	10	0	19	0	0
Battens, 2½ in. and 3 in. by 7 in.	13	10	0	14	10	0
Third yellow deals, 3 in. by 11 in. and 9 in.	13	10	0	15	0	0
Battens, 2½ in. and 3 in. by 7 in.	11	0	0	12	0	0
Petersburg: first yellow deals, 3 in. by 11 in.	21	0	0	22	10	0
Do. 3 in. by 9 in.	18	0	0	19	10	0
Battens	13	10	0	15	0	0
Second yellow deals, 3 in. by 11 in.	16	0	0	17	0	0
Do. 3 in. by 9 in.	14	10	0	16	0	0
Battens	11	0	0	12	10	0
Third yellow deals, 3 in. by 11 in.	13	0	0	14	0	0
Do. 3 in. by 9 in.	12	10	0	14	0	0
Battens	10	0	0	11	0	0
White Sea and Petersburg— First white deals, 3 in. by 11 in.	14	10	0	15	10	0
" " 3 in. by 9 in.	13	10	0	14	10	0
Battens	11	0	0	12	0	0
Second white deals, 3 in. by 11 in.	13	10	0	14	10	0
" " 3 in. by 9 in.	12	10	0	13	10	0
" " battens	10	0	0	11	0	0
Pitch-pine: deals	16	10	0	20	0	0
Under 2 in. thick extra	0	10	0	1	0	0

PRICES CURRENT.—Continued on page 55.

that of the widening of Cross-street. Two-thirds of the property required for this improvement has been purchased during the year, and the negotiations are now proceeding with a view to the acquisition of the remainder of the property.—*Manchester Courier.*

BRITISH GOODS AT CAPE TOWN AND CHICAGO.—The Board of Trade desire to draw the attention of the commercial community to the fact that Mr. E. J. Cattell, their correspondent at Cape Town (who is also the Secretary of the Cape Town Chamber of Commerce), and Mr. A. Finn, H.M. Consul at Chicago, are prepared to receive samples from British manufacturers, at the manufacturers' risk, but free of expense to them except as noted below, and to exhibit such samples, respectively, at the Chamber of Commerce and at the Consulate. Prices should be attached in sterling f.o.b., or c.i.f., or if possible in currency, landed, duty paid. No charge is proposed at Cape Town, but at Chicago a small fee of 5s. per square foot occupied by the exhibitors has to be made for any period not longer than a year.

BIRMINGHAM ART GALLERY AND UNIVERSITY.—The late Mr. John Feeney, who in his lifetime presented to the Art Gallery some examples of Rossetti and Sir E. Burne-Jones, with fine collections of Oriental armour, Japanese enamels, and ivories, etc., has bequeathed 50,000*l.* to the Art Gallery, and 20,000*l.* to the University for the endowment of a professorship for lectures upon subjects having a direct bearing upon the local trades and industries.

THE LATE MR. A. W. MILLS.—A sum of 21,000*l.* to the Manchester and district charities and numerous legacies to his servants are bequeathed under the will of the late Mr. Mills, architect (of the firm of Messrs. Mills & Murgatroyd), whose estate is valued at 92,000*l.* The bequests include 8,000*l.* to the Manchester Society of Architects, 500*l.* to the Architects' Benevolent Society, 4,000*l.* to Owens College as permanent endowment, and 3,000*l.* to Manchester Grammar School to found scholarships tenable at Oxford or Cambridge.

PROPOSED SALES OF CHURCH PLATE.—At a sitting of the Consistory Court in Exeter Cathedral on December 20, Mr. C. E. H. Chadwyck-Healey, K.C., Chancellor of the Diocese, refused to grant a faculty for the proposed sale by the rector and churchwardens of Churchstanton of a silver chalice bearing the inscription "Churchstanton, 1660," and what is presumed to be a local hall-mark. It was desired to apply the proceeds towards the fund for a repair of the parish church, but the learned Chancellor was of opinion that, other objections apart, the donor of the chalice did not intend that it should be converted to such a purpose. On the other hand, Dr. Tristram, K.C., Chancellor of the Diocese of London, has just directed the issue of a faculty authorising the sale of a disused silver flagon, part of the Communion plate of Cowley parish church, near Uxbridge. The flagon, of early XVIIIth century workmanship, was given to the church by one Haynes, a parishioner; and an offer of 135*l.* is made for it. Dr. Tristram agreed to the appropriation of the proceeds of the sale, firstly, to the purchase of a smaller flagon, and, secondly, towards the erection, at an estimated cost of 600*l.*, of a parish club and mission room, for which a site has been presented.

S. PETER'S, BUDLEIGH SALTERTON.—Messrs. Percy Bacon & Brothers have just executed another window of three lights in this church, as a memorial. The lights contain the figures of S. Edward the Confessor, in the left light; S. George in the centre, and S. Alban in the other. There is also a memorial brass beneath the window.

OPEN DOMESTIC FIRE GRATES.—We have received from Dr. Pridgin Teale a very interesting and courteous letter in which he takes exception to a statement of ours in our issue of December 16 ("Tests of Open Domestic Fire Grates") about fire grates "of the well-known type recommended by Dr. Teale." The type to which we referred is, of course, that which was first recommended by Dr. Teale and is now generally associated with his name; it is known by its splayed sides, forward-sloping back, economiser, and vertical front bars. Dr. Teale reminds us that "the fireplace in which the fire is sunk below, or rather behind, the hearth, so as to substitute the hearth raised above the grid for front bars, was invented by my son and myself," and adds that "the various sunk fireplaces are more or less a copy of his patent and were brought out a considerable time after his invention." We had not forgotten this later grate invented by Dr. Teale and his son and patented by the latter; but we still think that our reference to "the well-known type recommended by Dr. Teale" was not misleading. The grate invented by himself and his son, and known, not as the "Teale" but as the "Front Hob Fireplace," obviously belongs to the class which we described as "a more modern kind without front bars." Dr. Teale's name is so honourably associated with the reform that has taken place in domestic fire grates in recent years, that we should be very sorry indeed to say anything which might in any way detract from the credit due to him.

PATENTS OF THE WEEK.

APPLICATIONS PUBLISHED.*

19,469 of 1904.—A. R. HUBBARD and R. FLAY: *Kitchen Ranges.*

This relates to kitchen ranges, and consists of a fire grate constructed with teeth, cast upon two parallel horizontal shafts or axes, the teeth being formed with two of their sides of greater length than the third or top side, the three sides being convex in end view, and the two lower sides terminating in a point at the bottom and presenting a greater surface for the air to travel through in its passage to the fire, the two shafts being carried through from the front to the back of the fireplace and arranged to revolve in bearings in the latter, and geared together so that when one of the shafts is turned more or less, the two shafts with their teeth are caused to rock, and the fuel resting upon them is agitated to any desired extent.

19,470 of 1904.—A. R. HUBBARD and R. FLAY: *Boilers for Kitchen Ranges and the like.*

This relates to a boiler for kitchen ranges and the like, consisting of a hollow metal ring placed horizontally at a short distance above a fire pot or grate below, so that the flame and hot products of combustion heat the bottom and inner side of the hollow ring, through which they pass, and are then conveyed away to a chimney and a circulating pipe supplying water to the interior of the boiler.

3,941 of 1905.—W. G. HARRISON and T. WORRALL: *Locks and Latches, such as Rim and Mortise, which are Adapted to be Operated by a Key from either Side of a Door.*

This relates to locks and latches, such as rim and mortise, which are adapted to be operated by a key from either side of a door, and consists of a bridge fixed about midway between the front and back plates of the case, beyond which the key-bit cannot be passed in inserting the key within the case prior to turning it therein, in combination with a bolt, which may be moved by the key, as the key-bit is simply turned round at either side of the bridge after the bit has been inserted into the case up to the bridge only, from the corresponding side thereof.

4,584 of 1905.—H. R. ANTCLIFF: *Fasteners for Windows, Doors, and the like.*

This relates to a fastener for windows, and consists of a bracket fixed in a line with the top sash of the window frame, said bracket having an inclined piece pivoted thereto, in such a manner that the end of the pivoted piece always bears against a right-angled projecting plate fixed to the other sash, a peg on the plate of the bracket takes a hole in the right-angled projecting plate, the sashes or parts being firmly held together until the end of the pivoted inclined piece is turned free of the right-angled projecting plate when the window is opened, and when the window is being closed the edge of the right-angled projecting plate takes against the edge of the inclined piece, and turns the same free on one side until the right-angled projecting plate is free of the end of the inclined piece when the same moves into its closed position.

5,799 of 1905.—C. W. TONKS, G. A. TONKS, and E. TONKS: *Pre-payment Locks for Closets and the like.*

This relates to a pre-payment lock for closets and the like, and consists of a device, which, as the latch bolt is moved in by the closing of the door, is thereby caused to press upon the coin and ensure that it will fall clear of the mechanism in case it does not otherwise fall, and such bolt is moved in.

6,107 of 1905.—H. WILSON: *Boilers for Kitchen Ranges and like Purposes.*

This relates to boilers for kitchen ranges and other purposes, and consists of a flue or passage being formed through the body of the ordinary rectangular or like-shaped boiler usually constructed of copper, and fixed behind the fire-grate space of a kitchen range. The flue or passage is preferably of a flattened oval shape, but it may be of round, square, or any suitable form, and extends from the back part of the bottom of the boiler to the front part of the top, thus forming a diagonal flue through the boiler. Instead of one such flue two or more may be employed.

6,168 of 1905.—W. C. KIMBER, H. T. TALLOCK, and W. F. STANLEY & CO., LTD.: *Drawing Appliances.*

This relates to drawing appliances, and consists of a substantial frame having hard wood runners upon right and left hand edges. A metal bar of the length of the frame is mounted upon wheels running upon the said runners, the parallel motion of which is ensured by an endless wire passing over pulleys at top and bottom of frame, and crossed underneath, so that the wire from the top of the bar on one side is fixed to the bottom of the bar on the opposite side and *vice versâ*, suitable pulleys being provided under the frame for guiding the wire.

6,526 of 1905.—A. H. NEWEY: *Ventilators.*

This relates to ventilators, and is characterised by a quick grooved screw plug working in a collar on a perforated face plate, the one end of the screw plug being attached to a back plate in such a manner that when the screw plug is partly rotated the back plate is caused to recede away from or move towards the face plate.

7,199 of 1905.—J. F. BUCKLEY: *Disinfecting Apparatus in Connexion with the Water Waste Preventers of Water-closets and the like.*

This relates to a disinfecting apparatus for water-closets and the like, and consists in effecting the horizontal travel of a slide to discharge the tablets by means of a link connected to the ball lever.

9,050 of 1905.—R. W. SEWELL: *Mortise and other Locks for Doors and the like.*

This relates to mortise and other locks for doors and the like, and consists in the arrangement of a spring latch, the head of which protrudes from and works through a face plate, whilst its stem is carried by and works through and within one or more bent, bifurcated, and elbow-pivoted levers, and which latch is opened by an ordinary rotating or other style knob or handle impinging or acting on said pivoted lever or levers.

10,665 of 1905.—H. F. E. HOFMANN: *Spade.*

This relates to a wooden spade having a blade consisting of several parts, and is characterised by the fact that the blade is composed of a number of separate narrow laths or staves, the middle stave carrying the shaft and two edge or side strips, the said staves and strips being shaped to form the blade, and held together by means of anchor wires or tie-rods running transversely through the staves and strips.

11,629 of 1905.—DR. O. ZIMMERMANN: *Formation of Stacks of Tubes Especially Applicable for Water Cooling and Heating Apparatus and the like.*

This relates to a process for the formation of stacks of tubes especially applicable for water cooling and heating apparatus, in which process end pieces are formed by pouring molten metal into the space between the ends of the tubes and the casing surrounding the same, said end pieces being thus produced firmly cast upon the tubes and casing ready for forming the ends of the apparatus.

14,672 of 1905.—T. P. RUDKINS and P. K. O'BRIEN: *Means for Lifting and Otherwise Transferring Goods.*

This relates to a device for lifting and otherwise transferring goods, and consists in the combination with a supporting frame of means for connecting it to a platform, a truck pivotally connected to the frame, a lever or levers for turning an axle or the like, having frame support, and connexions between the axle and the truck.

15,035 of 1905.—C. H. LOVERING: *Gates.*

This relates to a gate comprising oppositely disposed posts, a cross piece connecting the upper ends of the post, a gate hinged at its lower rear end to each post, levers pivoted upon said cross piece, said levers being pivoted together at their inner ends, a connexion between the outer end of each lever, and the rear of the gate there beneath, and means connected with the aforesaid connexion whereby both gates may be tilted simultaneously.

15,570 of 1905.—J. W. WESTWOOD, C. BARTER, and T. TAYLOR: *Apparatus Forming a System for Combined Hot-water and Steam Warming of Buildings and the like.*

This relates to an apparatus forming a system for combined hot-water and steam warming of buildings and the like, consisting of a steam generator, a hot water heating boiler or part boiler, a tank situated at the top of the building, having two plates in connexion with the flow pipe, distributing return pipes in connexion with radiators, the steam pipe with automatic valve, the injector or steam mixer in connexion with the flow pipe, the automatic float valve in the tank, the controlling weighted safety valve in the tank, a valve in said tank being connected by levers, with the valve in the main steam pipe.

27,308 of 1904.—J. WARD: *Tar Paving.*

This relates to tar paving, and consists in the employment of a bonding tar compound for adhering and holding the pieces of stone together, consisting of distilled tar and ground lime, ground chalk, limestone dust, or like, alkaline powdered earth or substance, compounded by adding the powdered substance to the tar while in a hot state.

5,865 of 1905.—W. HEPWORTH-COLLINS: *Construction of Conduits for Containing Electric Cables and Wires and other Wires, Tubes, Pipes, and the like.*

This relates to the construction of conduits for containing electric cables, and wires, and other wires, tubes, pipes, and the like, and consists in the combination of a number of rectilinear

* All these applications are in the stage in which opposition to the grant of Patents upon them can be made.

...ctional lengths to form the sides and part of ...p and bottom with two T sections, to form the ...t of the bottom and the lid.

...097 of 1905.—F. M. PROCKTER and J. B. HOWORTH: *Apparatus for Supplying Humidified Air to the Interior of Buildings.*

This relates to an apparatus for supplying and distributing humidified air, comprising a shallow ...ssel for containing the liquid for humidifying ...e air, and consists of a fan situated in a shaft ...bove it with a deflector intervening between ...id fan and liquid, and another deflector over-...anging said fan.

...066 of 1905.—H. SUTCLIFFE: *Means for Joining Flushing Pipes to Closet Basins, or for Making ...like Pipe Connexions.*

This relates to a device for joining flushing pipes ...o the flushing horns of water-closets, or for ...making like pipe connexions, comprising a cone ...having a number of radial leaves, each one of ...which is slightly twisted in such a manner that ...when applied to form a joint the said leaves ...overlap and present a solid or unbroken surface, ...without interstices.

SOME RECENT SALES OF PROPERTY:

ESTATE EXCHANGE REPORT.

January 5.—By COOPER & GOULDING.

...ton Park.—35 to 45 (odd), 65, 67, and 69, Lucas-av., u.t., 92 and 92½ yrs., w.r., 327l. 12s. £1,650

By WALLIS & CLUNN.

...trand.—43, Bedford-st. (Williams' Dining Rooms), l., y.r. 90l. 2,550

Contractions used in these lists.—F.g.r. for freehold ground-rent; l.g.r. for leasehold ground-rent; i.g.r. for improved ground-rent; g.r. for ground-rent; r. for rent; f. for freehold; c. for copyhold; l. for leasehold; p. for ...session; e.r. for estimated rental; w.r. for weekly ...ental; q.r. for quarterly rental; y.r. for yearly rental; ...t. for unexpired term; p.a. for per annum; yrs. for ...ears; la. lane; st. for street; rd. for road; sq. for ...quare; pl. for place; ter. for terrace; cres. for crescent; ...v. for avenue; gdns. for gardens; yd. for yard; gr. for ...ove; b.h. for beerhouse; p.h. for public-house; o. for ...ffice; s. for shops; ct. for court.

TO CORRESPONDENTS.

NOTE.—The responsibility of signed articles, letters, ...nd papers read at meetings rests, of course, with the ...uthors.

We cannot undertake to return rejected communications; and the Editor cannot be responsible for ...rawings, photographs, manuscripts, or other documents, or for models or samples, sent to or left at this ...ffice, unless he has specially asked for them.

Letters or communications (beyond mere news items) ...hich have been duplicated for other journals are NOT DESIRED.

All communications must be authenticated by the ...ame and address of the sender whether for publication or not. No notice can be taken of anonymous ...ommunications.

We are compelled to decline pointing out books and ...rms addresses.

Any commission to a contributor to write an article, ...or to execute or lend a drawing for publication, is given ...subject to the approval of the article or drawing, when ...received, by the Editor, who retains the right to reject ...it if unsatisfactory. The receipt by the author of a ...proof of an article in type does not necessarily imply its ...acceptance. The Editor cannot undertake to read and ...consider articles offered for acceptance unless they are ...type-written.

All communications regarding literary and artistic ...matters should be addressed to THE EDITOR; those ...relating to advertisements and other exclusively business matters should be addressed to THE PUBLISHER, ...and not to the Editor.

MEETINGS.

FRIDAY, JANUARY 12.

Institution of Civil Engineers (Students' Meeting).—Professor J. D. Cormack, B.Sc., on "The Theory of Machines." 8 p.m.

MONDAY, JANUARY 15.

Royal Institute of British Architects.—President's "At Home." A small Exhibition of Working Drawings is being arranged for the occasion. 8.30 to 11 p.m.

Surveyors' Institution.—Mr. A. T. Walmisley on "Modern Surveying Instruments." 8 p.m.

London Institution.—Mr. J. Guinness Broodbank on "The Port of London," illustrated. 5 p.m.

TUESDAY, JANUARY 16.

Architectural Association Camera and Cycling Club.—Mr. G. Trotman on "Winchester Cathedral." 7.30 p.m.

The Institution of Heating and Ventilating Engineers.—Annual general meeting (Institution of Mechanical Engineers, Storey's-gate). Election of officers, etc., Presidential address by Mr. W. Nelson Haden, and paper by Mr. A. H. Barker on "Calorimetric Methods of Investigating the Loss of Heat from Buildings and Radiators." 7 p.m.

Institution of Civil Engineers.—Papers to be further discussed:—(1) "The Elimination of Storm-water from Sewerage Systems," by Mr. D. E. Lloyd-Davies. (2) "On the Elimination of Suspended Solids and Colloidal Matters from Sewage," by Lieut.-Colonel A. S. Jones, D.C., and Mr. W. O. Travis, M.D. 8 p.m.

WEDNESDAY, JANUARY 17.

The Quantity Surveyors' Association ("The Chinese Room," Holborn Restaurant).—Adjourned discussion upon Mr. F. B. Hollis's paper, "Some Thoughts on the Quantity Surveyor, and his Relation to the Building Owner, the Architect, and the Builder." 7 p.m.

Builders' Foremen and Clerks of Works Institution.—Annual meeting of the members. 8 p.m.

Edinburgh Architectural Association.—Mr. W. T. Oldrieve on "What H.M. Office of Works is doing for Historic Buildings in Scotland." 8 p.m.

Northern Architectural Association.—Mr. R. G. Hatton on "Jacobean Floral Patterns." 7.30 p.m.

Institution of Civil Engineers.—Students' visit to the works of the South Metropolitan Gas Company, 709, Old Kent-road, S.E. 2.30 p.m.

THURSDAY, JANUARY 18.

Society of Arts (Indian Section).—Mr. C. E. Buckland, C.I.E., on "The City of Calcutta." 4.30 p.m.

Society of Arts (Howard Lecture).—Professor Silvanus Thompson, D.Sc., on "High Speed Electric Machinery with Special Reference to Steam Turbine Machines." I. 8 p.m.

FRIDAY, JANUARY 19.

Architectural Association.—Mr. F. Lynn Jenkins on "The Consideration of Sculpture by Architects." 7.30 p.m.

Royal Institution.—Professor J. J. Thomson on "Some Applications of the Theory of Electric Discharge to Spectroscopy." 9 p.m.

Institution of Mechanical Engineers.—(1) Discussion to be resumed and concluded on paper on "The Behaviour of Materials of Construction Under Pure Shear," by Mr. E. G. Izod; (2) Mr. Robert A. Bruce on "Worm Contact." 8 p.m.

PRICES CURRENT OF MATERIALS.

*** Our aim in this list is to give, as far as possible, the *average* prices of materials, not necessarily the lowest. Quality and quantity obviously affect prices—a fact which should be remembered by those who make use of this information.

BRICKS, &c.

	£ s. d.	
Hard Stocks	1 7 0	per 1000 alongside, in river.
Rough Stocks and Grizzles	1 4 0	" " "
Facing Stocks	1 16 0	" " "
Shippers	2 0 0	" " "
Flettons	1 5 6	" at railway depôt.
Red Wire Cuts	1 11 0	" " "
Best Fareham Red	3 12 0	" " "
Best Red Pressed Ruabon Facing	5 0 0	" " "
Best Blue Pressed Staffordshire	4 1 0	" " "
Do. Bullnose	4 6 6	" " "
Best Stourbridge Fire Bricks	3 15 6	" " "
GLAZED BRICKS.		
Best White and Ivory Glazed Stretchers	12 0 0	" " "
Headers	11 0 0	" " "
Quoins, Bullnose, and Flats	16 0 0	" " "
Double Stretchers	19 0 0	" " "
Double Headers	16 0 0	" " "
One Side and two Ends	19 0 0	" " "
Two Sides and one End	20 0 0	" " "
Splays, Chamferred, Squints	20 0 0	" " "
Best Dipped Salt Glazed Stretchers, and Header	12 0 0	" " "
Quoins, Bullnose, and Flats	14 0 0	" " "
Double Stretchers	15 0 0	" " "
Double Headers	14 0 0	" " "
One Side and two Ends	15 0 0	" " "
Two Sides and one End	15 0 0	" " "
Splays, Chamferred, Squints	14 0 0	" " "
Second Quality White and Dipped Salt Glazed	2 0 0	" less than best.

	s. d.	
Thames and Pit Sand	6 9	per yard, delivered.
Thames Ballast	5 3	" "
Best Portland Cement	26 0	per ton, "
Best Ground Blue Lias Lime	19 0	" "

NOTE.—The cement or lime is exclusive of the ordinary charge for sacks.

Grey Stone Lime ..... 11s. 0d. per yard, delivered.
Stourbridge Fireclay in sacks 27s. 0d. per ton at rly. dpt.

STONE.

	s. d.	
BATH STONE—delivered on road waggons, Paddington Depôt	1 6½	per ft. cube.
Do. do. delivered on road waggons, Nine Elms Depôt	1 8½	" "
PORTLAND STONE (20 ft. average)—Brown Whitbed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 1	" "
White Basebed, delivered on road waggons, Paddington Depôt, Nine Elms Depôt, or Pimlico Wharf	2 2½	" "

	s. d.	
Ancaster in blocks	1 10	per ft. cube, deld. rly. depôt.
Beer "	1 6	" "
Greenshill "	1 10	" "
Darley Dale in blocks	2 4	" "
Red Corsehill "	2 2	" "
Closeburn Red Freestone	2 0	" "
Red Mansfield "	2 4	" "

YORK STONE—*Robin Hood Quality.*

Scappled random blocks	2 10	" "
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 3	per ft. super., "
6 in. rubbed two sides ditto, ditto	2 6	" "
3 in. sawn two sides slabs (random sizes)	0 11½	" "
2 in. to 2½ in. sawn one side slabs (random sizes)	0 7½	" "
1½ in. to 2 in. ditto, ditto	0 6	" "

STONE (*continued*).

HARD YORK—	s. d.	
Scappled random blocks	3 0	per ft. cube, deld. rly. depot.
6 in. sawn two sides landings to sizes (under 40 ft. super.)	2 8	per ft. super., "
6 in. rubbed two sides ditto	3 0	" "
3 in. sawn two sides slabs (random sizes)	1 2	" "
2 in. self-faced random flags	0 5	" "

	s. d.	
Hopton Wood (Hard Bed) in blocks	2 0	per ft. cube, deld. rly. depôt.
" " " 6 in. sawn both sides landings	2 7	per ft. super. deld. rly. depôt.
" " " 3 in. sawn both sides random slabs	1 0	" "
" " " 2 in. do.	0 8½	" "

SLATES.

In. In.	£ s. d.	
20×10 best blue Bangor	13 2 6	per 1000 of 1200 at r. d.
20×12 " "	13 17 6	" "
20×10 first quality "	13 0 0	" "
20×12 " "	13 15 0	" "
16×8 " "	7 5 0	" "
20×10 best blue Portmadoc	12 12 6	" "
16×8 " "	6 12 6	" "
20×10 best Eureka unfading green	15 17 6	" "
20×12 " "	18 7 6	" "
18×10 " "	13 5 0	" "
16×8 " "	10 5 0	" "
20×10 permanent green	11 12 6	" "
18×10 " "	9 12 6	" "
16×8 " "	6 12 6	" "

TILES.

	s. d.	
Best plain red roofing tiles	42 0	per 1000 at rly. depôt.
Hip and Valley tiles	3 7	per doz. "
Best Broseley tiles	50 0	per 1000 "
Do. Ornamental tiles	52 6	" "
Hip and Valley tiles	4 0	per doz. "
Best Ruabon red, brown, or brindled do. (Edwards)	57 6	per 1000 "
Do. Ornamental do.	60 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 0	" "
Best Red or Mottled Staffordshire do. (Peakes)	51 9	per 1000 "
Do. Ornamental do.	54 6	" "
Hip tiles	4 1	per doz. "
Valley tiles	3 8	" "
Best "Rosemary" brand plain tiles	48 0	per 1000 "
Best Ornamental tiles	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 8	" "
Best "Hartshill" brand plain tiles, sand-faced	50 0	per 1000 "
Do. pressed	47 6	" "
Do. Ornamental do.	50 0	" "
Hip tiles	4 0	per doz. "
Valley tiles	3 6	" "

WOOD.

BUILDING WOOD.	At per standard. £ s. d.	£ s. d.
Deals: best 3 in. by 11 in. and 4 in. by 9 in. and 11 in.	13 10 0	... 15 0 0
Deals: best 3 by 9	13 0 0	... 14 0 0
Battens: best 2½ in. by 7 in. and 8 in., and 3 in. by 7 in. and 8 in.	11 0 0	... 12 0 0
Battens: best 2½ by 6 and 3 by 6	0 10 0	less than 7 in. and 8 in.
Deals: seconds	1 0 0	less than best.
Battens: seconds	0 10 0	" "
2 in. by 4 in. and 2 in. by 6 in.	9 0 0	... 10 0 0
2 in. by 4½ in. and 2 in. by 5 in.	8 10 0	... 9 10 0
Foreign Sawn Boards—1 in. and 1¼ in. by 7 in.	0 10 0	more than battens.
¾ in.	1 0 0	"

Fir timber: best middling Danzig or Memel (average specification)	At per load of 50 ft. 4 10 0	... 5 0 0
Seconds	4 0 0	... 4 10 0
Small timber (8 in. to 10 in.)	3 12 6	... 3 15 0
Small timber (6 in. to 8 in.)	3 0 0	... 3 10 0
Swedish balks	2 10 0	... 3 0 0
Pitch-pine timber (30 ft. average)	3 5 0	... 3 15 0

JOINERS' WOOD.	At per standard.	
White Sea: first yellow deals, 3 in. by 11 in.	24 0 0	... 25 0 0
3 in. by 9 in.	22 0 0	... 23 0 0
Battens, 2½ in. and 3 in. by 7 in.	16 10 0	... 18 0 0
Second yellow deals, 3 in. by 11 in.	18 10 0	... 20 0 0
" " 3 in. by 9 in.	17 10 0	... 19 0 0
Battens, 2½ in. and 3 in. by 7 in.	13 10 0	... 14 10 0
Third yellow deals, 3 in. by 11 in. and 9 in.	13 10 0	... 15 0 0
Battens, 2½ in. and 3 in. by 7 in.	11 0 0	... 12 0 0
Petersburg: first yellow deals, 3 in. by 11 in.	21 0 0	... 22 10 0
Do. 3 in. by 9 in.	18 0 0	... 19 10 0
Battens	13 10 0	... 15 0 0
Second yellow deals, 3 in. by 11 in.	16 0 0	... 17 0 0
Do. 3 in. by 9 in.	14 10 0	... 16 0 0
Battens	11 0 0	... 12 10 0
Third yellow deals, 3 in. by 11 in.	13 0 0	... 14 0 0
Do. 3 in. by 9 in.	12 10 0	... 14 0 0
Battens	10 0 0	... 11 0 0
White Sea and Petersburg—First white deals, 3 in. by 11 in.	14 10 0	... 15 10 0
" " 3 in. by 9 in.	13 10 0	... 14 10 0
Battens	11 0 0	... 12 0 0
Second white deals, 3 in. by 11 in.	13 10 0	... 14 10 0
" " 3 in. by 9 in.	12 10 0	... 13 10 0
" " battens	10 0 0	... 11 0 0
Pitch-pine: deals	16 10 0	... 20 0 0
Under 2 in. thick extra	0 10 0	... 1 0 0

PRICES CURRENT.—Continued on page 55.

List of Contracts, etc.

CONTRACTS.

(For some Contracts still open, but not included in this List, see previous issues.)

Nature of Work or Materials.	By whom Advertised.	Forms of Tender, etc., supplied by	Tenders to be deliv
300 and 350 Gallon Horsed Steam Fire-Engine	Hendon U.D.C.	S. Slater Grimley, Engineer, Council Offices, Hendon, N.W.	Jan. 1
*ROADMAKING AND PAVING WORKS	do.	do.	do.
Improvement in Smawthorne-avenue	Castleford U.D.C.	W. Green, Surveyor, Castleford	Jan. 1
Making-up Streets	Acton U.D.C.	D. J. Ebbetts, Surveyor, 57, High-street, Acton, W.	do.
Goods and Materials	Plymouth Corporation	F. Howarth, Water Engineer, Municipal Buildings, Plymouth	do.
Fireclay Pipes, Grit Setts, etc.	Lancaster Corporation	J. C. Mount, Borough Surveyor, Lancaster	do.
Infant School, Hawthorn	Pontypridd U.D.C.	P. R. A. Willoughby, Surveyor, Pontypridd	Jan. 17
Twelve Months' Supply of Paints, etc.	Manchester Corporation	R. Williamson, Town Hall, Manchester	do.
Infant School at Croesyceiliog	Monmouthshire Edcatn. Com.	H. J. Griggs, Architect, Newport, Mon.	do.
Alterations at Mixed School, Croesyceiliog	do.	do.	do.
Alterations to Gates & Paving at Wrkhse., Crescent-rd., Crumpsall	Manchester Guardians	A. J. Murgatroyd, Architect, 23, Strutt-street, Manchester	do.
Cabmen's Shelter, Chapel-street	Hull Corporation	J. H. Hirst, City Architect, Hull	do.
Painter's Work, Craigleith Poorhouse, Comely Bank	Edinburgh Parish Council	Clerk of the Council, Castle-terrace, Edinburgh	do.
Heating C.M. Chapel, etc., with Hot-water, Gilfach Bargoed		W. Harris, Architect and Surveyor, Gilfach Bargoed	Jan. 18
Granite and Slag	Grantham R.D.C.	A. H. Malin, Clerk, Grantham	do.
Baptist Chapel, Glanbrydan-avenue, Pantygwydr, Swansea	Gorse-lane Baptist Church	C. T. Ruthen, Architect, Bank-chbrs., Heathfield-st., Swansea	do.
Granite and Slag	Spilsby R.D.C.	T. A. Busbridge, District Surveyor of Highways, Spilsby	do.
*MARRIED COUPLES' QUARTERS AT WORKHOUSE	Fulham Guardians	Clerk to Guardians, Fulham Palace-road, W.	do.
Sunday Schoolroom, Fitzhamon-embankment, Cardiff	Rev. H. A. Coe	A. Grove, Architect, 15, Cliffords'-inn, London, E.C.	Jan. 19
Sinking a Well at Gransha, 75 ft. deep	Londonderry Lunatic Asylum	M. A. Robinson, C.E., Richmond-street, Londonderry	do.
Villa to be Erected at the Crofts, Elgin		C. C. Doig, Architect, Elgin	do.
Sewer and Paving Works, Boutpool-street	Barnstaple U.D.C.	A. Thorne, Borough Surveyor, Barnstaple	do.
Primitive Methodist Chapel and School, Guisborough		E. Wilson, 10, Westgate, Guisborough	do.
Renovation of No. 2, Church-street, Cardiff		Dashwood Caple, Architect, Church-street-chambers, Cardiff	do.
Stoneware Pipes and Goods	Tyldesley-w.-Shakerley U.D.C.	J. Brooke Smith, Surveyor, Council Offices, Tyldesley	Jan. 20
House, Aynsley-terrace, Consett	Shotley Bridge, etc., Gas Co.	T. H. Murray, Architect, Consett	do.
Making good All Saint's-road, King's Heath	King's Norton, etc., U.D.C.	A. M. Cross, Engineer, 23, Valentine-road, King's Heath	Jan. 22
1,200 yds. of Wrought-Iron Railing, Franklin-road	do.	do.	do.
Hartshell Stones, Granite and Slag	Middleton Cheney R.D.C.	W. J. Treadwell, District Sur., Middleton Cheney, Banbury	do.
2,000 or 4,000 Tons of 90-lb. Steel Bullhead Rails	Gt. Northern Rly. Co., Ireland	T. Morrison, Secretary, Amiens-street Terminus, Dublin	do.
1,250 or 2,500 Tons of Cast-Iron Chairs	do.	do.	do.
700 Tons of 16-in. Cast-Iron Pipes	Metropolitan Water Board	A. B. Pilling, Clerk, Savoy Court, Strand, W.C.	do.
43 Workmen's Dwellings, Sackville-road, etc.	Bangor Corporation	O. Roberts, Architect, The Temple, Dale-street, Liverpool	do.
School Furniture, Trafalgar Schools	Twickenham U.D.C.	H. J. Saunders, Clerk, Town Hall, Twickenham	do.
Unbroken Guernsey Granite	Croydon Guardians	H. List, Clerk, Mayday-road, Thornton Heath	do.
Infants' School, Common-lane, River	Dover Town Council	H. E. Stilgoe, Surveyor, Maison Dieu House, Dover	do.
Two Houses at Crawcrook	West Wylam, etc., Co-op. Soc.	Central Stores, Prudhoe	do.
House at Corbridge	do.	do.	do.
*DEFECTIVE SCHOOL, Etc.	Beckenham U.D.C.	Council's Surveyor, Beckenham	do.
*BUILDER'S WORK AT STROUD GREEN WELL	Croydon Borough Council	Borough Engineer, Town Hall, Croydon	do.
Stores	Plymouth Corporation	J. Paton, Borough Engineer, Municipal Buildings, Plymouth	Jan. 23
Widening Railway between Littleborough and Summit Tunnel	Lancashire and Yorkshire Ry.	Engineer's Office, Hunts Bank, Manchester	do.
*BOUNDARY WALL, NEASDEN	Willesden District Council	Council's Engineer, Dyne-road, Kilburn, N.W.	do.
Residence, Stabling, etc., Free School-lane, Halifax		T. Kershaw, Architect, Lancs. and Yorks. Bank-ch., Halifax	Jan. 24
Raking Machinery for Sewage Works	Salford Corporation	J. Corbett, Borough Engineer, Town Hall, Salford	do.
Making-up Five New Roads	Carshalton U.D.C.	C. P. Lovelock, Clerk, High-street, Carshalton	do.
*ANNUAL CONTRACTS	Chelsea Borough Council	Borough Surveyor, Town Hall, Chelsea, S.W.	do.
Sewage Purification Works, Burnham	Eton R.D.C.	A. Gladwell, Engineer, Council Offices, 160, High-st., Slough	Jan. 25
4½ miles of Pipe Sewers, etc., Burnham	do.	do.	do.
Additions to Fressingfield School	The Managers	Rev. Canon Raven, The Vicarage	do.
Technical School, Eblana-avenue, Kingstown	Technical Instruction Comm.	G. T. Moore, Architect, 1 & 2, Foster-pl., College Gn., Dublin	do.
*ANNUAL CONTRACTS	County Borough of West Ham	Borough Engineer, Town Hall, Stratford, E.	do.
*HEATING APPARATUS, ETC., AT WORKHOUSE	Blackburn Guardians	F. C. Ruddle, Architect, 4, King-street, Blackburn	Jan. 26
Granite	Chipping Norton R.D.C.	R. Entwistle, Surveyor, Charlbury, Oxon	do.
*SEWER WORKS IN CITY OF WESTMINSTER	Westminster City Council	Works Dept., Westminster City Hall, Charing Cross-rd., W.C.	do.
Broken Granite and Slag	Hertfordshire County Council	Urban A. Smith, County Surveyor, Hatfield	Jan. 27
Road at Camelsdale, Sussex	West Sussex Education Com.	J. H. Howard, Architect, Lower-street, Haslemere	do.
Alterations to No. 40, South-street, Dorchester	Governors of Grammar School	F. T. Maltby, Architect and Surveyor, Dorchester	do.
Forming and Paving Six Streets and Sixty-six Passages	Warrington Paving Com.	Borough Engineer and Surveyor, Town Hall, Warrington	Jan. 29
Public Elementary School, Errwood-road, Levenshulme	Lancashire Education Comm.	H. Littler, County Architect, 16, Ribbledale-place, Preston	do.
Bathrooms and Hot-water Works at Workhouse, Gosport	Alverstoke Guardians	H. A. F. Smith, Architect, Star-chambers, Gosport	do.
*SCHOOL AND HOUSE AT BEAUWORTH	Hants County Council	County Surveyor, The Castle, Winchester	do.
Villa at Cranmore-gardens, Lisburn-road, Belfast		Hobart & Heron, 124, Scottish Provident-buildings, Belfast	Jan. 30
*FREE LIBRARY	Nelson Corporation	Poyser & Savidge, Architects, King-street, Nottingham	do.
*WORKS AT CORONER'S COURT	Lambeth Borough Council	Borough Engineer, 346, Kennington-road, S.E.	Feb. 1
*INFANTS' SCHOOL, PORTSLADE-BY-SEA	F. Sussex Local Educ. Auth.	County Surveyor, County Hall, Lewes	Feb. 2
*SCHOOL, ETC., CHIDDINGLY	do.	do.	do.
Covered Service Reservoir, Arkley, Barnet	District Gas and Water Co.	T. H. Martin, Engineer, Nation-road, New Barnet	do.
Drainage Works, Contract No. 1	Wilton Corporation	J. Taylor, Sons, & Santo Crimp, 27, Gt. George-street, S.W.	Feb. 3
Calvinistic Methodist Chapel, etc., Birchgrove, Llansamlet	Municipality of Pretoria	Rees Llewellyn, Architect, Birchgrove House, Birchgrove	Feb. 5
Refuse Destructor	Bishopthorpe R.D.C.	Mosenthal, Sons, & Co., 72, Basinghall-street, E.C.	Mar. 15
Handbroken Blue Stone	Irish National Foresters	F. Ware, Clerk, 6, New-street, York	No date.
Rebuilding, etc., Twenty-five Houses, Chapel-row, Ferryhill Station	Newc.-on-Tyne Educ. Comm.	H. Stobart & Co., Ltd., Etherley, Durham	do.
Forester's-hall, etc., Belfast	do.	J. P. Convery, 29, Catherine-street, Newry	do.
Alterations to Gas-Fittings at Five Schools	Mr. H. Bromley	A. Goddard, Sec., Educ. Offices, Northumberland-rd., Newc.	do.
Incandescent Light at Five Schools	Plympton St. Mary R.D.C.	do.	do.
Primitive Methodist Schools, etc., Sacriston	Messrs. Norman & Pring	Davidson & Phillipson, Architects, Pearl-bldgs., Newc.-on-T.	do.
Shops and Houses, Pier-avenue, Clacton-on-Sea	Canmore Bowling Club	Baker & Wrightson, Architects, 21, Liverpool-street, E.C.	do.
Laying Sewer (120 ft.) at Pomphlett, Plymstock	Islington Guardians	F. A. Clark, Surveyor, 83, Old Town-street, Plymouth	do.
Rebuilding The Half-Moon Inn, Newton Abbot	do.	E. F. Hooper, Architect, 6, Union-road, Pennsylvania, Exeter	do.
Residence, Hansler-grove, Molesey		H. C. Fread, A.R.I.B.A., Bank-chambers, Teddington	do.
Laying-out Bowling-green, Forfar		Gavin & Soutar, Architects, Forfar	do.
*TWO BLOCKS AT ST. JOHN'S-ROAD WORKHOUSE		W. Smith, Architect, 65, Chancery-lane, W.C.	do.
*ADDS., ETC., AT GUARDIANS' OFFICES, ST. JOHN'S-ROAD		do.	do.
*THREE SHOPS AT SHORTLANDS, KENT		Arthur Cole, "Mogok," Thurlestone-road, West Norwood	do.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in
*LOCAL MAIN ROAD SURVEYOR	Gloster County Council	180*l.* per annum	Jan 26
*TWO LOCAL MAIN ROAD SURVEYORS	do.	165*l.* per annum	do.

AUCTION SALES.

Nature and Place of Sale.	By whom Offered.	Date of Sale.
*FREEHOLD BUILDING LAND, STAMFORD HILL.—At the Mart	David Burnett & Co.	Jan. 24
*FREEHOLD BUILDING SITE, CITY OF LONDON—At the Mart	Farebrother, Ellis, Egerton, Breach, Galsworthy, & Co.	Feb. 22

* *Those with an asterisk are advertised in this number: Competitions, —; Contracts,* iv. vi. viii. x.; *Public Appointments,* xvii.; *Auction Sales,* xxvi.

PRICES CURRENT.—*Continued from page 53.*

WOOD (*continued*).

	At per standard. £ s. d.		£ s. d.
JOINERS' WOOD (*continued*)—			
Yellow Pine—First, regular sizes	44 0 0	upwards.	
Oddments	32 0 0	,,	
Seconds, regular sizes	33 0 0	,,	
Yellow Pine oddments	28 0 0	,,	
Kauri Pine—Planks, per ft. cube..	0 3 6 ...	0 5 0	
Danzig and Stettin Oak Logs—			
Large, per ft. cube	0 3 0 ...	0 3 6	
Small ,, ,,	0 2 6 ...	0 2 9	
Wainscot Oak Logs, per ft. cube..	0 5 0 ...	0 5 6	
Dry Wainscot Oak, per ft. sup. as inch	0 0 8 ...	0 0 9	
½ in. do. do	0 0 7 ...	—	
Dry Mahogany—Honduras, Tabasco, per ft. super. as inch ...	0 0 9 ...	0 1 0	
Selected, Figury, per ft. super. as inch	0 1 6 ...	0 2 6	
Dry Walnut, American, per ft. super. as inch	0 0 10 ...	0 1 0	
Teak, per load	17 0 0 ...	22 0 0	
American Whitewood Planks, per ft. cube	0 4 0 ...	0 5 0	
Prepared Flooring, etc.—	Per square.		
1 in. by 7 in. yellow, planed and shot	0 13 6 ...	0 17 6	
1 in. by 7 in. yellow, planed and matched	0 14 0 ...	0 18 0	
1¼ in. by 7 in. yellow, planed and matched	0 16 0 ...	1 0 0	
1 in. by 7 in. white, planed and shot	0 12 0 ...	0 14 6	
1 in. by 7 in. white, planed and matched	0 12 6 ...	0 15 0	
1¼ in. by 7 in. white, planed and matched	0 15 0 ...	0 16 6	
½ in. by 7 in. yellow, matched and beaded or V-jointed brds.	0 11 0 ...	0 13 6	
1 in. by 7 in. ,, ,,	0 14 0 ...	0 18 0	
¼ in. by 7 in. white ,, ,,	0 10 0 ...	0 11 6	
1 in. by 7 in. ,, ,,	0 12 9 ...	0 15 0	

6 in. at 6d. to 9d. per square less than 7 in.

JOISTS, GIRDERS, &c.

	In London, or delivered Railway Vans, per ton. £ s. d.		£ s. d.
Rolled Steel Joists, ordinary sections	6 15 0 ...	7 10 0	
Compound Girders, ordinary sections	8 5 0 ...	9 5 0	
Steel Compound Stanchions	10 17 6 ...	11 7 6	
Angles, Tees, and Channels, ordinary sections	8 5 0 ...	9 5 0	
Flitch Plates	8 10 0 ...	9 0 0	
Cast Iron Columns and Stanchions including ordinary patterns	7 0 0 ...	8 0 0	

METALS.

	Per ton, in London. £ s. d.		£ s. d.
IRON—			
Common Bars	8 0 0 ...	8 10 0	
Staffordshire Crown Bars, good merchant quality	8 10 0 ...	9 0 0	
Staffordshire "Marked Bars"	10 0 0 ...	—	
Mild Steel Bars	8 15 0 ...	9 0 0	
Hoop Iron, basis price	9 5 0 ...	9 10 0	
,, ,, Galvanised	17 0 0 ...	—	
('And upwards, according to size and gauge.)			
Sheet Iron Black—			
Ordinary sizes to 20 g.	9 10 0 ...	—	
,, ,, 24 g.	10 10 0 ...	—	
,, ,, 26 g.	12 0 0 ...	—	
Sheet Iron, Galvanised, flat, ordinary quality—			
Ordinary sizes, 6 ft. by 2 ft. to 3 ft. to 20 g.	14 0 0 ...	—	
Ordinary sizes to 22 g. and 24 g.	14 10 0 ...	—	
,, ,, 26 g.	15 0 0 ...	—	
Sheet Iron, Galvanised, flat, best quality—			
Ordinary sizes to 20 g.	17 0 0 ...	—	
,, ,, 22 g. and 24 g.	17 10 0 ...	—	
,, ,, 26 g.	19 0 0 ...	—	
Galvanised Corrugated Sheets—			
Ordinary sizes 6 ft. to 8 ft. 20 g.	13 10 0 ...	—	
,, ,, 22 g. and 24 g.	14 0 0 ...	—	
,, ,, 26 g.	15 5 0 ...	—	
Best Soft Steel Sheets, 6 ft. by 2 ft. to 3 ft. by 20 g. and thicker	11 10 0 ...	—	
Best Soft Steel Sheets, 22 g. & 24 g.	12 10 0 ...	—	
,, ,, 26 g.	14 15 0 ...	—	
Cut Nails, 3 in. to 6 in.	9 10 0 ...	9 15 0	
(Under 3 in., usual trade extras.)			

LEAD, &c.

	Per ton, in London. £ s. d.		£ s. d.
LEAD—Sheet, English, 3lb. and up.	20 0 0 ...	—	
Pipe in coils	20 10 0 ...	—	
Soil pipe	21 0 0 ...	—	
Compo pipe	23 0 0 ...	—	
ZINC—Sheet—			
Vieille Montagne ton	33 10 0 ...	—	
Silesian	33 0 0 ...	—	
COPPER—			
Strong Sheet per lb.	0 1 0 ...	—	
Thin ,,	0 1 1 ...	—	
Copper nails ,,	0 0 11 ...	—	
BRASS—			
Strong Sheet ,,	0 0 11 ...	—	
Thin ,,	0 1 0 ...	—	
TIN—English Ingots ,,	0 1 8 ...	—	
SOLDER—Plumbers' ,,	0 0 8 ...	—	
Tinmen's ,,	0 0 10 ...	—	
Blowpipe ,,	0 0 11 ...	—	

ENGLISH SHEET GLASS IN CRATES.

15 oz. thirds	2½d. per ft. delivered.
,, fourths	1½d. ,, ,,
21 oz. thirds	3d. ,, ,,
,, fourths	2½d. ,, ,,
26 oz. thirds	4½d. ,, ,,
,, fourths	3½d. ,, ,,
32 oz. thirds	5½d. ,, ,,
,, fourths	5d. ,, ,,
Fluted Sheet, 15 oz.	3½d. ,, ,,
,, 21 oz.	4½d. ,, ,,
½ Hartley's Rolled Plate	2d. ,, ,,
¼ ,, ,, ,,	2½d. ,, ,,
⅛ ,, ,, ,,	2½d. ,, ,,
Figured and Oxford Rolled Oceanic, etc. white	4d. ,, ,,
,, ,, ,, tinted	5½d. ,, ,,

OILS, &c.

		£ s. d.
Raw Linseed Oil in pipes	per gallon	0 1 11
,, ,, ,, in barrels	,,	0 2 0
,, ,, ,, in drums	,,	0 2 2
Boiled ,, ,, in pipes	,,	0 2 1
,, ,, ,, in barrels	,,	0 2 2
,, ,, ,, in drums	,,	0 2 4
Turpentine in barrels	,,	0 4 2
,, in drums	,,	0 4 4
Genuine Ground English White Lead	per ton	22 10 0
Red Lead, Dry	,,	21 10 0
Best Linseed Oil Putty	per cwt.	0 6 6
Stockholm Tar	per barrel	1 12 0

VARNISHES, &c.

	Per gallon. £ s. d.
Fine Pale Oak Varnish	0 8 0
Pale Copal Oak	0 10 6
Superfine Pale Elastic Oak	0 12 6
Fine Extra Hard Church Oak	0 10 0
Superfine Hard-drying Oak, for seats of Churches	0 14 0
Fine Elastic Carriage	0 12 6
Superfine Pale Elastic Carriage	0 16 0
Fine Pale Maple	0 16 0
Finest Pale Durable Copal	0 18 6
Extra Pale French Oil	1 1 0
Eggshell Flatting Varnish	0 18 0
White Copal Enamel	1 4 0
Extra Pale Paper	0 12 0
Best Japan Gold Size	0 10 6
Best Black Japan	0 16 0
Oak and Mahogany Stain	0 9 0
Brunswick Black	0 8 6
Berlin Black	0 16 0
Knotting	0 10 0
French and Brush Polish	0 10 0

TERMS OF SUBSCRIPTION.

"THE BUILDER" (Published Weekly) is supplied DIRECT from the Office to residents in any part of the United Kingdom at the rate of 19s. per annum (52 numbers) PREPAID. To all parts of Europe, America, Australia, New Zealand, India, China, Ceylon, etc., 26s. per annum.

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TENDERS.

Communications for insertion under this heading should be addressed to "The Editor," and must reach us *not later than* 10 *a.m. on Thursdays*. [N.B.—We cannot publish Tenders unless authenticated either by the architect or the building-owner; and we cannot publish announcements of Tenders accepted unless the amount of the Tender is stated, nor any list in which the lowest Tender is under 100*l.*, unless in some exceptional cases and for special reasons.]

* Denotes *accepted*. † Denotes *provisionally accepted*.

ABERYSTWYTH.—For the new Davies memorial laboratories at Buarth Mawr. Mr. A. W. S. Cross, architect, 46, New Bond-street, London, W. Quantities by Mr. W. Windsor, 37, Brown-street, Manchester—

H. Willcocks & Co., Wolverhampton .. £16,164

ALVERSTOKE (Hants).—For drainage works at the workhouse, Park-road, Gosport, for the Guardians. Mr. H. A. F. Smith, architect and surveyor, Star-chambers, Gosport. Quantities by architect:—

G. Jennings, Ltd.	£948 0 0	C. J. Lear & Son	£669 0 0
R. W. Lowe	946 0 0	C. M. Dash	648 0 0
E. K. Hawkins	889 8 0	R. M. Middleton & Co., Elmhurst Works, Gosport*	645 0 0
S. Wood	825 14 5		
F. A. Lane	805 0 0		
J. Hunt	715 9 10		
E. T. Hughes	692 1 5		
W. W. Learmouth	679 0 0		

BLACKLEY.—For erecting an infirmary and a nurses' home, Charleston-road, for the Prestwich Guardians. Messrs. T. Worthington & Son, architects, 46, Brown-street, Manchester. Quantities by Mr. W. T. Watts, Manchester:—

R. Neill & Sons, Strangeways, Manchester £62,000

BOGNOR.—For private street works in Circus-street and Highfield-road, for the Urban District Council. Mr. O. A. Bridges, Surveyor, Council Offices, Bognor:—

Circus-street Contract.

E. H. King	£610 0 0
Tate Bros., Bognor*	519 5 0
J. Jackson	478 16 11

Highfield-road Contract.

E. H. King	£518 0 0
Tate Bros.	477 10 0
J. Jackson, Bognor*	431 12 1

BRIDLINGTON.—For the construction of two timber groynes on the north foreshore, for the Property Committee. Mr. E. R. Matthews, C.E., Borough Surveyor, Town Hall, Bridlington:—

W. Gradwell & Co., Ltd.	£450 0 0	Harman & Langton	£350 0 0
G. Bell	420 0 0	Leggott & Speight, Hull*	336 9 6
J. Sawdon	355 0 0	B. Robinson‡	320 0 0

‡ Withdrawn.

BRIGHTON.—For erection and completion of mains, store, blacksmith's and testing shops, etc., as extension of electricity works, for the Borough Council. Mr. T. Garrett, architect, 30, Ship-street, Brighton, and at Hayward's Heath. Quantities by Messrs. Matthews & Coleman, 11, Old Queen-street, Westminster:—

W. H. Hyde	£5,166	Rowland Bros.	£4,298
Bostel Bros.	4,900	Miller & Selmes	4,295
G. R. Lockyer	4,847	J. Barnes & Sons	4,284
J. Martin	4,595	Lynn & Sons	4,269
H. J. Penfold	4,457	R. Cook & Sons	4,198
J. Parsons & Sons	4,413	J. Longley & Co.	4,148
W. A. Field & Co.	4,368	Hockley & Co.	3,993
J. & W. Simmonds	4,320	Sattin & Evershed, Brighton*	3,970
Saunders Bros.	4,299		

* Accepted subject to few minor deductions.

CAERAU.—For an infectious diseases hospital at Caerau, near Cardiff, for the Llandaff and Dinas Powis Rural District Council. Mr. J. H. James, architect, 18, Quay-street, Cardiff:—

J. Jones	£12,475 0 0	J. G. Thomas & Sons	£9,818 5 9
J. Calwarthy & Blight	11,219 15 0	G. Beams	9,688 3 0
F. Bond	10,782 5 3	E. Turner & Sons	9,613 16 8
A. J. Colborne	10,715 4 9	W. Symonds Co.	9,574 11 6
C. C. Dunn	10,458 2 0	Hughes & Stirling	9,454 2 7
G. Griffiths & Sons	10,207 6 0	E. R. Evans & Bros.	9,440 12 6
H. Smith	10,182 0 0	D. W. Davies	9,340 10 0
S. Shepton & Son	10,180 2 7	Knox & Wells	9,203 11 9
W. T. Morgan	10,155 16 1	D. Davies & Son, Trade-street, Cardiff*	9,161 2 5
A. White & Sons	9,950 0 0		
E. Williams	9,928 16 9		
W. Williams	9,847 15 7		

DOVER.—For laying a sewer in Maison Dieu-road, etc., and surface water drain in Folkestone-road, for the Town Council. Mr. H. E. Stilgoe, Borough Engineer, Maison Dieu House, Dover:—

Johnson & Co.	£3,773 0 0	Muirhead, Greig, & Matthews	£3,071 15 2
E. Stokes	3,734 12 11	G. Lewis & Sons	2,985 0 0
W. S. Long	3,601 4 0	R. & G. Bruley, Dover*	2,944 0 0
C. Castle & Co.	3,350 14 7	Smith & Co.	2,924 19 7
O. Wright & Co.	3,251 17 3		
G. G. Rayner	3,245 18 10		
J. W. Dean, Ltd.	3,094 4 10		

GREAT CROSBY.—For outfall sewers, for the Urban District Council. Mr. Watkin Hall, Surveyor, Council Offices, Coronation-road, Great Crosby, Lancs.:—

R. Annakin, Harrogate £9,052 17

HAMPTON.—For making-up and paving part of Park-road, Hampton Hill, for the Urban District Council. Mr. Sidney H. Chambers, Surveyor, Public Offices, Hampton:—

F. Hoffman	£1,315 11 6½	R. & W. Swaker	£1,086 16 6
T. Adams	1,241 12 3	J. Shelbourne & Co.	1,065 0 0
S. Atkins	1,185 8 10	S. Kavanagh	1,058 5 3
J. & W. Drake	1,184 10 0	J. Mowlem & Co.	1,051 0 0
T. Watson, Junr.	1,150 15 11	Fry Bros., Lion Wharf, Greenwich*	982 11 4
T. Free & Sons	1,133 5 3		
Cunningham & Co.	1,125 3 6		

HARROGATE.—For street improvement works for the Corporation. Mr. F. Bagshaw, Borough Engineer and Surveyor, Harrogate:—

E. Long, 7, Forest-av., Starbeck, Harrogate* .. £201 6 4

HARROGATE.—For street improvements, Strawberry-square, for the Corporation. Mr. F. Bagshaw, Borough Engineer and Surveyor, Harrogate:—

E. Long, 7, Forest-av., Starbeck, Harrogate* .. £201 6 4

HELLINGLY (Sussex).—For underpinning, alterations, and additions to Horsebridge Mill, for Messrs. The Horsebridge Roller-Milling Company, Ltd. Mr. A. H. Burtenshaw, architect, Hailsham:—

M. Martin & Sons	£450	T. Rich	£313
P. Dennis & Co	348	W. Burgess, Hellingly	275

[Architect's estimate, £301.]

ILFORD.—For private street works, Eltisley, Natal, Sandyhill, and West roads, for the Urban District Council. Mr. H. Shaw, Surveyor, Town Hall, Ilford:—

Parsons & Parsons, The Wharf, Ilford	£768 9 6	West-road
D. T. Jackson, Barking	207 6 9	Eltisley-road
D. T. Jackson, Barking	445 1 9	Natal-road

ILFORD.—For 1,107 yds. of fencing, for the Urban District Council. Mr. H. Shaw, Surveyor, Town Hall, Ilford:—

Muray, Marshall, Godalming, Surrey .. £129 3

KIRTON (Lincolnshire).—For erecting an infants' school at the Kirton Church-end Council Schools. Mr. J. Rowell, architect, Church-lane, Boston:—

W. H. Parker & Son, Boston* £1,042 10

[Nine other tenders, highest £1,745.]

LONDON.—For reconstructing iron roofs and works in connexion therewith at No. 89 and 91, Sumner-street, Southwark, S.E. Messrs. Rogers, Chapman, & Thomas, F.S.I., 50, Belgrave-road, Westminster, S.W.:—

D. Rowell & Co.	£684 15	W. Harbrow*	£566 3
Humphreys, Ltd.	597 0		

LONDON.—For iron fire-escape staircase and other internal alterations as required by the London County Council, at No. 54, Bankside, S.E. Messrs. Rogers, Chapman, & Thomas, F.S.I., 50, Belgrave-road, Westminster, S.W.:—

G. Wright, Ltd.	£279 0	Hayward, Bros., & Eckstein, Ltd.*	£235 0
H. & G. Measures	263 17		

LONDON.—For the erection of a new police candidate's section house, at Regency-street, Westminster. Mr. J. Dixon Butler, Architect and Surveyor to the Metropolitan Police, New Scotland Yard, S.W. Quantities by Messrs. Thurgood, Son, & Chidgey, Charing Cross-chambers, Duke-street, Adelphi:—

W. Eyre	£14,765	C. Ansell	£13,731
F. C. Minter	14,641	Higgs & Hill	13,640
Lascelles & Co.	14,463	Appleby & Sons	13,630
Harris & Wardrop	14,290	F. & H. F. Higgs	13,544
Treasure & Son	14,252	Godson & Sons	13,489
J. Carmichael	14,250	Holloway Bros.	13,450
Lovatt, Ltd.	14,000	Fairhead & Co.	13,427
Grover & Son	13,972	Lawrance & Son	13,295
Prestige & Co.	13,955	Mowlem & Co., Ltd.	12,980
Lathey Bros.	13,895		

LONDON.—For the pulling down and re-erection of No. 15, Great Saint Andrew-street, for Mr. Joshua Morell. Messrs. Hayward & Maynard, architects, etc., 20, John-street, Adelphi, W.C.:—

Cope & Co.	£2,040	Patman & Fotheringham	£1,943
J. Bentley	2,256		

[A contract has since been entered into with Messrs. Patman & Fotheringham to carry out the work for the sum of £2,016.]

LONDON.—For repairs, decorations, electric lighting, and other improvements, at No. 36, Lower Belgrave-street, Belgravia, S.W. Messrs. Rogers, Chapman, & Thomas, F.S.I., 50, Belgrave-road, Westminster, S.W.:—

Notton & Co., Ltd.	£471 0 6	Hibberd Bros., Ltd.	£413 0 0
Rawlings Bros., Ltd.	465 0 0	E. D. Hook*	410 3 0

LONDON.—For extensions to King's Cross Laundry, Caledonia-street and Netherland-place, N. Messrs. S. J. Reynolds & Herbert Hicks, architects, Reigate and Broadstairs. Quantities by Mr. J. Kennard, Croydon:—

McCormick & Son	£11,550	Martin, Wells, & Co., Ltd.	£10,132
Goddard & Son	11,264	F. & H. F. Higgs	10,123
Colls & Sons	10,880	E. Lawrance & Sons	9,981
J. Simpson & Son	10,642	Holliday & Greenwood*	9,949
Perry & Co.	10,550		
C. Wall, Ltd.	10,489		
D. W. Barker	10,347		

LONDON.—For decorations and sanitary repairs and electric light installation at No. 20, Penywern-road, Earl's Court, S.W. Messrs. J. W. Morley & Co., Surveyors, 176, Earl's Court-road, S.W.:—

G. Basing	£253 0 0	H. Smith & Son	£223 0 0
J. Rugg & Son	251 0 0	H. W. Buxton & Son*	222 9 6
T. W. Heath & Son	230 0 0		

MABLETHORPE.—For erecting a children's wing to the convalescent home, for the Committee. Mr. R. H. Fowler, architect, Louth. Quantities by Mr. J. J. Creswell, Grimsby:—

Bowman & Sons	£2,465 0 0	F. M. Thompson & Sons	£2,933 10 0
A. J. Elmes	2,187 0 11	J. Cooper & Son	1,900 0 0
F. Moore	1,993 0 0	G. H. Vickers	1,990 0 0
A. Wood	1,979 0 0	Mawer Bros., Louth*	1,888 0 0
J. Kime	1,969 0 0		

PLYMOUTH.—For the erection of workmen's dwellings, How-street, for the Corporation. Mr. James Paton, Borough Engineer. Quantities by S. W. Haughton, Plymouth:—

Pearn Bros.	£6,833 0 0	F. J. Stanbury	£6,189 10 1
Wakeham Bros.	6,448 0 0	A. C. Jones	6,043 0 0
Stevenson & Co.	6,403 0 0	Pearce Bros.	5,986 0 0
		S. Roberts	5,930 1 8½
		A. N. Coles*	5,678 18 0

TAUNTON.—School for 600 children in three departments, including science, cookery, laundry, manual instruction, and caretaker's cottage, at North Town, Taunton, for the Taunton Borough Education Committee. Messrs. H. Dare Bryan and F. W. Roberts, joint architects, 2, Hammet-street, Taunton. Quantities by Messrs. Bernard & Son, Baldwin-street, Bristol:—

—	General Tender.	Glazed Bricks for Dadoes.	Glazed Tiles for Dadoes.
	£ s. d	£ s. d.	£ s. d.
Bennet	14,039 0 0	1,322 14 6	365 5 0
Perkins & Sons	14,000 0 0	330 0 0	150 0 0
Stephens & Baston	14,000 0 0	394 16 3	395 4 9
Wakeham Bros.	13,422 0 0	466 0 0	370 0 0
Pittard & Son	13,300 0 9	397 0 0	305 14 0
Roberts	12,994 0 0	392 18 8	316 6 8
Stephens & Sons	12,803 0 0	585 0 0	327 0 0
Stanbury	12,609 17 3	375 19 6	322 10 3
Pethick	12,444 0 0	550 0 0	365 0 0
Moggridge	12,430 5 0	170 0 0	330 8 11
Long	12,397 0 0§	—	—
Pollard	12,030 0 0	240 0 0	365 0 0
Pollard & Co.	12,000 0 0	577 0 0	326 0 0
Coles	11,875 0 0	418 0 0	285 0 0
Colborne	11,870 0 0§	—	—
Small	11,663 0 0	265 8 3	369 19 4
Blake	11,650 0 0	486 0 0	326 0 0
Wilkins	11,630 0 0	420 0 0	320 0 0
A. J. Spiller	11,621 16 0	660 6 0	368 2 0
	Revised Tenders.		
Coles	9,040 8 9	418 0 0	285 0 0
Blake	8,800 0 0	486 0 0	326 0 0
Wilkins	8,730 0 0	420 0 0	320 0 0
Small	8,700 0 0	328 18 0	369 19 0
A. J. Spiller	8,463 0 0	300 0 0	330 0 0
Pollard & Co., Taunton‡	8,299 0 0	340 0 0	300 0 0

‡ Recommended for acceptance, £8,639.
§ Too late for consideration.

TAUNTON.—For additions to Pool Wall Mills, for the Taunton Manufacturing Co. Mr. F. W. Roberts, architect, 2, Hammett-street, Taunton. Quantities by the architect:—

R. Wilkins	£2,136 0 0	T. Moggridge	£1,812 4 0
H. W. Pollard	2,116 13 0	H. J. Spiller & Son, Taunton*	1,810 0 0
F. W. Rowsell	1,984 0 0	J. E. Furseland‡	1,579 0 0
G. Pollard & Co.	1,946 9 9		
T. Manning & Son	1,831 0 0		

‡ Increased £150 through delay in accepting a tender when first sent in.

TIVERTON.—For sewage disposal works at the Sewage Farm, for the Corporation. Mr. J. Siddalls, Borough Engineer, Town Hall, Tiverton:—

J. Riley	£4,117 2 8	Woodman & Son	£2,846 15 10
Pethick Bros.	3,994 0 0	Pollard & Co., Ltd.	2,773 0 0
J. Shaddock	3,473 6 4	Smith & Co.	2,706 16 7
W. Shaddock	3,458 1 8	Stevens & Son, 116, Fore-street, Exeter*	2,633 0 0
Jenkins & Sons	3,224 4 0		
Steer & Pearce	3,124 0 0		
W. E. Tabor	2,957 16 5		
H. R. Cameron	2,946 10 0		

TOTTENHAM.—For erecting a school to accommodate 1,260 children on the Parkhurst-road site, for the Education Committee. Mr. G. E. T. Laurence, architect, 22, Buckingham-street, Adelphi, W.C.:—

		Amount to be deducted for Glazed Brick Dadoes and Plastered Walls.
Chessum & Sons	£25,300	£2,334 0 0
Clark & Sons	19,785	1,473 0 0
Cowley & Drake	24 395	2,136 0 0
F. J. Coxhead	20,242	1,269 0 0
Davey, Ltd.	21,969	1,771 0 0
Fairhead & Son	20,468	1,545 0 0
Goddard & Sons	22 282	2,205 7 4
J. Guttridge	23,281	1,680 0 0
Hull & Co.	—	—
Johnson & Son	22,750	1,791 0 0
Lawrence & Son	19,844	1,345 0 0
Lovatt, Ltd.	23,000	1,477 0 0
Myall & Upson	21,442	1,999 0 0
Newby Bros.	23,441	1,945 0 0
B. E. Nightingale	21,835	1,804 0 0
Oak Building Co.	21,992	1,870 0 0
Patman & Fotheringham	23,273	2,000 0 0
Pollard & Brand	21,690	1,680 0 0
A. Porter	22,771	1,900 0 0
Rowley Bros.	19,980	1,776 0 0
C. Wall, Ltd.	20,780	1,631 0 0
Wallis & Sons	21,000	1,560 0 0
Whitehead & Co.	23,085	1,797 0 0
Wilkinson & Son	22,820	1,823 0 0
Young & Son	21,197	1,350 0 0

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